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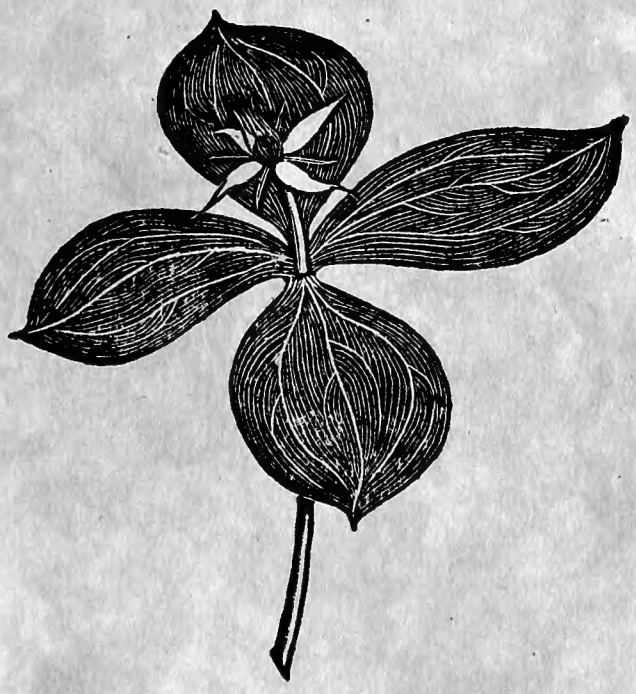

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THE READING NATURALIST

No. 25 for the year 1971-2

The Journal of

The Reading and District Natural History

Society

President:

Mr. H. H. Carter, M.A., B.Sc., A.M.A.

Hon. General Secretary:

Miss J. Toothill, B.Sc., Ph.D.
15 Birdhill Avenue
Reading
RG2 7JT

Hon. Editor:

Miss E. M. Nelmes
Dormers
194 Cainscross Road
Stroud
Glos.

Editorial Sub-Committee:

The Editor, B. R. Baker, Miss L. E. Cobb,
A. Price, Miss J. M. V. Housden,
Miss S. Y. Townend

Honorary Recorders:

Botany: Mrs. B. M. Newman, Earley Cottage, 25 Beech Lane, Earley, Reading

Entomology: Mr. B. R. Baker, 5 Dovedale Close, The Mount, Caversham, Reading

Vertebrates: Mr. H. H. Carter, 82 Kennylands Road, Sonning Common, Reading

Berkshire, Buckinghamshire and Oxfordshire
Naturalists' Trust :

Hon. County Secretary (Berks.): Mr. B. R. Baker,
The Museum, Reading

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Mr. Vear - 100 years old.

Our revered old friend Mr. Thomas Vear, honorary member of the Society and former President, celebrated his hundredth birthday on 12th March 1972. Mr. Vear has always been a great lover of the countryside and particularly of its trees. He spent all his working life in the timber trade and became an outstanding authority on trees and timber. This knowledge he used to share liberally with fellow members in talks and on excursions, among which our visits under his guidance to the grounds of Swallowfield Park are particularly memorable.

On Saturday 11th March, the President, Miss Joyce Watson and Miss Dora Mason called on Mr. Vear to convey the Society's congratulations. He was in excellent health and, although totally blind, was in sparkling form and irrepressibly cheerful. For an hour he enthralled his visitors with his reminiscences of his boyhood and youth and particularly of his travels with his bicycle in Holland, a country in which he is particularly interested as he believes himself to be descended from a Dutchman who came to England in the 1500's in connection with the drainage of the Fens.

We wish him continuing health and happiness in the months and years ahead.

L. C.

Meetings and Excursions 1971-72

Miss L. E. Cobb gave her Presidential Address entitled 'Then and Now' at the Annual General Meeting (attendance 47). Two meetings were devoted to members' films, talks and exhibits (41 and 47). The lectures delivered at the remaining indoor meetings were 'Bird life and Colour', by Dr. K. H. Southall (44); 'The Vegetation of the Limestone Pavement in the Burren, Eire', by Dr. R. M. Wadsworth (43); 'Natural History of West Java' by Dr. H. J. M. Bowen (45); 'They were very dry', the study of bones in Archaeology, by Mr. H. H. Carter (30); 'The World Wildlife Fund', by Mr. P. Craddock-Randall (37); 'The Work of the Water Resources Board with special reference to South-East England', by Mr. R. G. Sharp (36); and 'The Emperor Dragonfly and its African Relatives', by Mr. R. M. Gambles (31). A talk on 'Succulent Plants of South Africa', by Mr. G. D. Rowley, had to be cancelled owing to electricity cuts during the miners' strike.

Winter walks were held on December 4th, for birds (17), February 5th, to the Berkshire Downs, also for birds (25), and March 16th for mosses (16). On November 6th, Mr. R. H. Gambles' garden at Woodley was searched for beetles and other small invertebrates (9) and Mr. A. Price held a Microscopical Afternoon on January 8th (11).

The summer field meetings were: April 15th, Stitchen's Hill, near Streatley, for Hellebores (18); April 29th, College Wood, Checkendon, for birds (3); May 13th, Bearwood, Peppard (20+); June 3rd, Professor Harris's garden, Farley Hill, for alien plant species (20); June 7th, evening excursion to Loddon Valley (12); June 10th, Dry Sandford and Cothill Reserves (20); June 24th, Watlington Hill, for chalk flora (19); June 28th, evening excursion to the Historical Rose Garden, Shinfield Grange (8+); July 8th, Aston Rowant Reserve (8); July 19th, evening excursion to Dunsden-Caversham area; July 22nd, Snelsmore Common for bog flora; August 5th, reserves at Inkpen Common for heathland and Ham for chalk flora (30); August 16th, Mr. Rowley's garden for succulent plants, etc. (20); August 10th, coach excursion to the Hatchet's Pond area, New Forest (32); September 2nd, Newbury-Didcot, disused railway line, for chalk flora (16); September 16th, Crowsley Park, Binfield Heath (12); and October 7th, fungus foray at Kingwood (22).

Then and Now

The Presidential Address
to the Reading and District Natural History Society
October 1971

When I first applied myself to the problem of choosing a theme for this address, I thought it might be useful to consider why you had done me the honour of making me your President. Thinking back to the conversations that preceded my election, I found that there seemed to be two reasons. One was that it was felt that it was time the Society had a woman President again. That did not seem to be a very promising line. The other was that I had been a member for an extremely long time. That was better. The population nowadays is very mobile. There is an immense turn-over of membership and probably not many present members have any idea of what went on in the Society more than a few years ago, and I thought it might be of some interest to compare the Society as it was when I joined it in 1940 and as it is now, to look at the differences and similarities in the light of conditions then and now and to see if there are any useful conclusions to be drawn, any help to guide our steps towards our centenary year in 1981 and the celebrations that we hope will mark it and then beyond.

My original intention was to span just the thirty years of my own experience, but hardly had I made my choice when the Society's Minute books came into my hands with their invitation to delve further into the past and to begin by giving you an outline of the foundation of the Society and its earliest years.

The Society was founded on 6th April 1881 at a meeting at the Lodge Hotel at which it was resolved that "this meeting do form itself into a Natural History Society and Field Club for Reading and District". The Provisional Committee included Mr. J. L. Hawkins, father of Professor H. L. Hawkins who was a member from 1921 until his death in 1969 and whose wife is still an active member, so our links with that little band of enthusiasts who came together to such good purpose ninety years ago are very close indeed. The element of continuity is strong, and it is perhaps not surprising that in what I have to tell you similarities are more striking than contrasts.

On the administrative side: The subscription at the inaugural meeting was fixed at 2/6. Although this may arouse envy in some of the members who have queued up to pay their 15/- (I refuse to call it 75 pence) this evening and who now face a further rise in subscription, I doubt whether in fact we have kept up with the general level of inflation. In 1886, the cash book showed a balance of £2 14 7, so that members can feel the satisfaction of knowing that the assets have multiplied by a higher factor than the subscription.

The first indoor meeting was held in St. Mary's Churchyard, which does not sound very comfortable - I hope it means St. Mary's Church House - on Thursday (no change here) 27th November. The subject was various forms of scrapers, the manner in which they were made, used and fixed in socketed handles. Themes of subsequent meetings were British beetles, land shells and local flora, with the accent on the exhibition of collections in all cases. It is interesting to note the subjects of these very early meetings and reflect that Dr. Norman Joy, who wrote a standard monograph on British beetles, was a member for

many years and that from 1951 to 1953 we had Dr. Hamilton Quick, a distinguished amateur conchologist, as our President and he published a key to the land snails of the Reading area in no. 4 of The Reading Naturalist. Also as early as 1882, the medicinal properties of plants were discussed and in the 1940's we had as members the Misses Brett who kept a herbalists' shop and only two or three years ago Miss K. Butler, a member of a well-known local family of Pharmacists, addressed a junior meeting on medicinal plants. The May meeting in 1892 was on birds of Berks and Bucks and the attendance was 12. They were doing quite well, I think. It is difficult to compare this with our attendance of about 40. We have the advantages of a vastly increased population to draw upon and improved transport facilities but must set against this the pressure of competing interests nowadays.

In October 1882, we are told that it was resolved to hold a meeting "for conversation and the exhibition of specimens", so although the present series of Members' Evenings goes back no further than 1953, the idea is by no means new to the Society. In this respect as in many others we are building on the excellent foundations laid right at the outset. Indeed, what would then have been called 'self-help' and has become 'do-it-yourself' in modern phraseology was the keynote of those early days. All the lectures in the first years were given by members, and although it is undoubtedly right and proper in these outward-looking days that we should welcome guest speakers to many of our meetings, yet I am glad that we do not invariably do this and that at three meetings this session we are to have the pleasure and satisfaction of being addressed by fellow members.

In March 1883, there was a specimen meeting and microscopes were brought, but the fact that we had such a precedent does not detract from the enterprise of those who reintroduced this form of meeting last winter. The notable change in 1884 was a movement away from lectures on purely local topics to foreign themes - corals, Hyeres, France; snakes of India; Australia, and Italian Switzerland. In the same year, a paper was read by Mr. Crosfield of Redhill on the geographical distribution of wild plants in the British Isles, which puts us in mind right away of the work in which many of us took part in the 1950's gathering data for the Plant Atlas that was published by the Botanical Society of the British Isles in 1962. In 1885, a paper was read on Instinct - a very early departure from interest in collection and identification to the modern outlook and interest in behaviour. In 1890, there was a Conversazione at the Town Hall for the prize-giving of the School of Science and Art, and members exhibited collections of birds' nests, eggs, skins, shells, stuffed birds and animals, insects and plants.

Now to the field meetings in those very early days: The first field meeting on 14th June 1881 was to Bagshot - not an area that we frequent now. It has probably changed a lot and for the worse, but I do not know whether we should investigate the possibility of visiting Bagshot in June 1981 as part of the centenary year programme. Other excursions that summer were to Mapledurham and Emmer Green, which have a familiar ring, and there was a whole-day excursion to Bucklebury Common. We go a bit further afield on our annual all-day excursion in this more mobile, outward-looking age, but we visited Bucklebury Common as recently as last month and very enjoyable it was.

In June 1883, members took the train to Mortimer, spent the afternoon rambling about the Common and then walked back to Reading via Burghfield. I cannot imagine us doing that to-day, and perhaps one's

first impulse is to feel some shame at our lack of robustness, but reflecting on the difference between the country to be covered as one can imagine it was then and the straggling suburbia of to-day, perhaps we are justified. Other places visited in very early years were Tilehurst, Sulham, Pangbourne Marsh, Streatley and Shiplake.

As early as 1888 a combined excursion was made with the Literary and Scientific Society. This brings back interesting memories for me because in my teens, before I had heard of the Natural History Society, I enjoyed many wonderful outings and meetings with the Literary and Scientific, which I had joined initially on the Literary side, but in whose Scientific activities I took part with enthusiasm. It was a flourishing concern then and I wonder how it came about that our distinguished contemporary did not survive when our own Society, so much more circumscribed in its interests, managed to come through the difficult years.

In the same year, a paper on fungi was read and a Fungus Foray was held. Here indeed is the beginning of a venerable tradition. The interest of the Society in toadstools has always been strong, as indeed it should be, considering the distinguished mycologists whose help and encouragement we have been privileged to enjoy. Dr. Somerville Hastings, who as well as being a surgeon and politician, was the author of books on alpine flora and on British fungi (Toadstools at Home), was a member of the Society for forty years, was its President and finally an Honorary Member. For thirty years to my knowledge and probably much longer he was host at his delightful home 'Brackenfell' at Kingwood Common to our annual foray at which he also led us, as long as he was able, and identified our finds. Through him, also, the Forays were often graced by the presence of Dr. Ramsbottom of Kew. The tradition of hospitality is carried on by Dr. Hastings' son and daughter-in-law, who still put their home at our disposal and give us a gracious welcome on our Foray each year. We now generally enjoy the stimulating leadership of Dr. Hora of Reading University, a distinguished mycologist who has been a good friend of the Society for some thirty years.

The membership appears to have been all male for about the first ten years. Miss Hurry exhibited shells in 1889, but I suspect she was only a visitor and Mr. Dowsett gave an account of the shells. Three ladies were elected members in 1891. Unfortunately there is a long gap in our records after these first ten years and our next information relates to 1913, from which date we have a complete set of minutes. In 1921, a proposal to add ladies to the Committee was held over, but Miss M. E. Edmunds was elected in 1922, and in 1925 she became President. We have had one other woman President, our well-known friend Mrs. A. M. Simmonds, now Sandels, who served from 1948 to 1951. I know there are some present who will be interested to know that Mr. Dolton, whose remarkable collection of micro-lepidoptera is in Reading Museum, and who was a member of the Society until his death as recently as 1968, was already serving on the Committee in 1914. February 27th 1930 was momentous for the Society, as on that day Mr. Fishlock was elected to membership. There are still very many among us who realise the implications of that and who must wonder just what course the life of the Society would have run if it had not had Mr. Fishlock to guide its affairs for twenty-five years. He was elected one of two joint Honorary Secretaries in 1932 and sole Honorary Secretary in 1935. He continued in that office until 1953 when he was elected to the Presidency, handing over the Secretaryship to the capable hands of Mrs. Hasker - later Mrs. Fishlock - now Mrs. Chandy.

He held the Presidency until 1957 when he was elected an Honorary Member.

To return to our historical review:- The Society kept going through the difficult years of the 1914-1918 war, with lecturers drawn mostly from the membership and a number of informal meetings, visits to view specimens at a member's house and so on, and still numerous joint meetings with the Literary and Scientific Society.

The exhibition of wild flowers at the Museum began in 1916 and was apparently largely the work of members. In 1919, the collection of data in our District for a proposed Flora of the Thames Valley was under consideration. The setting down of members' observations in some permanent form or other has naturally enough been a constantly recurring theme, for this is one of the main functions of a local Society such as ours. We read in the earliest minutes a suggestion "that members should be impressed with the necessity of keeping note books and recording the occurrence of specimens for the general use of the Society". Here are the fore-runners of our Recorders' Reports, which are perhaps the Society's most valuable work, though it was not until comparatively recently that they assumed a permanent form. In 1900, in the middle of the Society's 'Dark Ages' for which our records are lost, the Society had produced a little book entitled The Flowering Plants, Ferns, etc. of the Country round Reading, of which the Society fortunately has a copy.

By 1920, a lecture by Mr. Frank Comyns of Newbury on British mosses with fifty varieties exhibited and subsequently put on show in the Museum attracted an attendance of 50, although the membership at that time was only 53. This post-war period seems to have been, understandably, a time of rapid expansion and three years later membership was nearly 80. The annual expenditure per member at this time was 3/8 and the balance had risen to over £10. I was surprised, however, to read that at the A.G.M. in 1920 the Secretaries reported that walks were arranged and held in May and June but that in the latter part of July and in August the weather was too unfavourable, and in 1927 "only four rambles were held due to unsettled weather". I do not know whether it is a tribute to the improvement in our climate or to the hardiness of the members, but I am quite unable to imagine two whole months passing in the summer with no field excursions taking place on account of weather conditions and it has certainly never happened during the period of my membership.

This was also a time of serious study, with lectures on such specialised subjects as mosses, fungi, etc. Recording groups were set up in 1922 to collect and verify records with a view to eventual publication. Recorders were substituted for the recording groups in 1923. By 1927, affairs looked much less rosy. Modern stresses set in at this time. Membership had fallen to 59 and it was stated in the annual report that the records of activities showed "variety but not encouragement" and that "owing to the busy life of mankind to-day, meetings and rambles must be reduced in number". Monthly meetings and rambles were decided upon. In 1933, the Society seems to have been in low water numerically and financially, but there was nevertheless great activity. An exhibition was held in September to arouse interest, and the South Eastern Union of Scientific Societies, which we had joined in 1916 and which was a vital and stimulating body in those days, held its Congress in Reading at the Society's invitation in 1934. A Field Sub-committee was set up to consider forms of field work that might be undertaken; the formation of a discussion group was proposed

in 1935, and it was in being in 1936; a panel of specialists was suggested; and in March 1933, Mr. Sylvester Bradley, M.R.C.S.,L.R.C.P., proposed an "annual publication containing records of the Society's work and transactions" cyclostyled at a cost of 2/6 per copy of about 100 pages. This excellent suggestion was warmly received, and had the matter been proceeded with in the proposed form, we might well now be preparing no. 40 of The Reading Naturalist instead of no. 24. However, it was suggested that the South Eastern Union would expect a report on the Natural History of Reading and District for their Congress in the following year, grandiose plans were put forward, and in spite of wise warning notes from many Committee members of the crippling effects of publications on small societies, Mr. Bradley whipped up guarators for a printed publication. He chose the name Quaestiones Naturales because he thought it was impressive. The Committee had misgivings - alternatives including "The Reading Naturalist" were discussed, but Quaestiones Naturales it was. The first number was put on sale in November 1933 at 5/- to members and 5/6 to non-members. It was a handsome printed publication, but it was never to have a successor in that form. It had cost nearly £55, and members did not respond as the rather optimistic sponsor had anticipated they would.

We now reach the point where this address was originally supposed to begin - the time about the beginning of the second world war when I joined the Society and about which I can speak from my own, albeit rather hazy, memory. I suppose the impression of the meetings I attended in those early years could best be summed up by the word 'cosiness'. The meeting place was, as it had been for many years, the Friends' Institute in Church Street, whither we made our way on moon-lit nights - meetings were once a month and the dates chosen to give members the benefit of the full moon - and after groping our way through blacked-out passages, found ourselves in a room with welcoming, padded chairs and well warmed by a cheerful coal fire. I have nostalgic memories of that fire, even though its flickering light made it difficult to see the slides very clearly. The atmosphere was very friendly. I think this has always been a characteristic of our Society. In those days, it was attributable in great measure to Mr. Fishlock, who, as I remember one member saying, was a father to us all, but I like to think that the tradition continues, and I am always pleased when people say to me, as they do not infrequently, that they enjoy our meetings particularly because everyone is so friendly. Attendances kept up well during those war years in spite of lack of buses, blackout, home-guard and civil defence duties and the rest. Meetings were held once a month in winter, sometimes in the afternoon. Excursions were held every ten days alternately on Wednesday and Saturday. It is an ill wind that blows no good, and the Treasurer at least must have been pleased. Balances, which had remained alarmingly low for many years, benefited from the reduction in the number of meetings and rose spectacularly.

In my first years with the Society, tea on field excursions was generally not carried in a haversack or dufflebag, but ordered in advance at a pub. This was time-honoured practice dating from the earliest years. In 1889, tea was taken at the Bull Hotel at Goring. In 1915, it was taken at the Round Oak at Padworth after a walk from Theale Station, and in the early 1940's we still frequently followed this programme. As the rigours of rationing increased, it became impossible to obtain tea and perforce we had to adopt the invariable practice of carrying it with us. This was bitterly disapproved of by many of the older members, who regretted the convenience and sociability of the former procedure, but was of inestimable benefit to the cause of

serious natural history as there was nothing more frustrating than to toil up a long lane from the station and arrive in sight of a richly productive area only to be torn away by the threat of bringing disgrace on the party by arriving very late for tea.

Travel in the earliest years seems to have been by train, and so it was largely when I first went out with the Society in 1940. By about ten years later we had abandoned the train for the bus, and I as it were lived right through the exclusively 'bus' age into the era dominated by the private car. Cars are a mixed blessing, but although they produce much confusion of organisation and are in some ways unsociable, they save a long trudge before a place of interest is reached and they carry our tea, macks, gumboots and equipment and open many places to us that were formerly inaccessible except by coach. One must not overdo the nostalgia.

An interesting activity of those war years was the collection of Atropa belladonna, Hyocyamus niger and Digitalis for drugs. There was a drying station for Atropa on Streatley Hill, and whole days were spent enjoyably and usefully collecting the leaves.

I spent particularly enjoyable evenings and afternoons with the Discussion Group. Transport was always by bicycle and picnic meals were carried so that the maximum time could be spent on useful observations. We enjoyed the leadership of such distinguished authorities as Professor Hawkins, Professor Tom Harris, Dr. Watson and Dr. Hora. I realise now that the discussion group was the object of much controversy and was frowned on by many, probably rightly, as invidious because membership was by invitation. At the time I was too inexperienced in administrative matters to be conscious of such things, but I was deeply conscious of the privilege that it was to attend such meetings and of the benefit as well as pleasure that I derived from them. I only wish that it was possible for the Society now to give as much stimulating help to keen young - and not-so-young - people as we received then. We do our best, but there are difficulties in the way. The group gradually faded out. There have since been requests from time to time for a study group or continuous study of an area but no comparable organised activity has ever emerged. A request in 1950 for some of our winter meetings to be devoted to basic instruction in a definite topic was met for a time though not, I suspect, unanimously approved, and we try to include informative lectures and field meetings on specialised branches, such as mosses, lichens, etc. from time to time.

The most note-worthy achievement of the Society during my membership has undoubtedly been the establishment of its annual publication The Reading Naturalist, the less ambitious but more viable successor of the ill-fated Quaestiones Naturales. This was due largely to the vision of Mrs. Simmonds (now Mrs. Sandels) who was President at the time and of two keen young student members, L. H. Williams and Paul Betts. It had long been rightly felt that the Recorders' Reports should be preserved in permanent form. They had hitherto been delivered orally, but had no permanence apart from the very abbreviated notes incorporated in the Minutes. In March 1949, a Sub-committee was appointed to enquire into the possibility of printing or duplicating the Reports, the go-ahead was given the following month and later in the year The Reading Naturalist no. 1 appeared. It is a modest but elegant booklet of 20 pages including, in addition to extracts from the Reports, a series of articles on Pamber Forest and a note on the Oxford ragwort. It was printed privately at the

University through the good offices of Paul Betts, who was the son of the Professor of Fine Art and himself a student in the Department. Even so, it strained the Society's slender resources, but the Members were proud of the achievement, showed faith in the future and raised the subscription from 5/- to 7/6 to finance future issues.

Dr. Hora then suggested that a key to toadstools of the Reading District that he was preparing should be incorporated in no. 2 and he would help with the cost. During the year, the proposed key grew to undreamed-of proportions, and no. 2 ran to 74 printed pages, and caused considerable financial anxiety at the time, but brought the Society to the favourable notice of a wide readership. The edition finally sold out and paid for itself, and secondhand copies are still in great demand. With the preparation of no. 3, it was decided that printing was too costly and the present duplicated form, with the familiar printed covers, was adopted and has been maintained ever since. Optimists have periodically raised the question of printing but it has always been clearly out of the question. Financing even the duplicated publication was not, and indeed is not, always easy, but welcome help was received on several occasions in the form of grants from the Cultural Committee of the Borough Council out of the profits from the Town Hall Science lectures. Later, we were able to purchase an old duplicator very cheaply through the good offices of Mr. Smallcombe and when that wore out to have the use of an electric duplicator belonging to the Corporation, and do all the running off and assembling ourselves and so effect a considerable saving. The Publication has now reached 23 numbers with the 24th in preparation, a high standard has been set, largely by Mr. D. Leatherdale and Miss E. M. Nelmes, who between them have held the Editorship for close on twenty years, and I think it is held in what I believe to be deservedly high esteem. The reading of Recorders' Reports at a meeting was dropped in 1959. A Preliminary List of Berkshire Micro-fungi by Dr. Harold Owen was published as a supplement to The Reading Naturalist in 1960.

Over the years, members of the Society have been involved in data gathering for a number of other publications or projected publications. I have mentioned The Flowering Plants, Ferns, etc. of the Country round Reading published in 1900. It was for many years a cherished project of Miss Kathleen Butler, the Recorder for Botany, to revise this publication. That particular plan never came to fulfilment in the anticipated form, but the knowledge gained in preparation for it stood us in good stead when many of us subsequently co-operated in squarebashing, as it came to be known, or the assembly of data on a grid basis, first of all for the Atlas of the British Flora published by the Botanical Society of the British Isles in 1962, then for Dr. Humphrey Bowen's Flora of Berkshire published in 1968, and currently for the projected Flora of Oxfordshire. A few members also put in a lot of very hard work on projects for the Chiltern Research Committee which was set up in 1959 to survey various aspects of the natural history of that rich and rewarding area, and the tangible results produced included A Survey of Chiltern Orchids by Mrs. Vera Paul issued as a separate publication, and Mr. Cyril Leeke's paper on muntjac in no. 22 of The Reading Naturalist.

I have seen considerable fluctuations in the Society's fortunes and although the decade 1946-56 saw the birth of the publication, a successful Exhibition lasting nearly a month in September 1946, stands at two short Exhibitions arranged by other bodies and a further highly successful exhibition in July 1956 to mark our 75th birthday, nevertheless membership and attendances at times fell so low that we

feared for our very existence. However, the birthday exhibition marked the turning point, membership passed the 100 mark a couple of years later and two events that occurred in 1958 set us still more surely on the upward path. One was a highly successful Congress of the South Eastern Union of Scientific Societies held in Reading that year and voted one of the best ever. The second was a change in our place of meeting. When the Friends' Institute could no longer accommodate us, we had met for a short while at the Abbey Gateway and then for many years, through the good offices of Professor Hawkins, at the University. In 1958, the University could no longer find space for us and we were generously offered accommodation in the China Room of Reading Museum. Though many regretted the severing of the close link we had had for so long with the University, there was soon no doubt of the beneficial effect of the more central position on attendances. London Road, though very convenient for a few, was inaccessible to many. After one season here, we had outgrown the China Room and were granted use of the Art Gallery to accommodate our greatly increased audiences.

There followed what must certainly be considered our boom years, with the Society more flourishing than ever before. Membership, bank balances and attendances at winter and summer events were all on the increase. The Young Naturalists' Evening organised in conjunction with the Museum at the Town Hall as a part of the S.E.U.S.S. Congress in 1958 was repeated as a highly successful annual event until 1970. The winter walks, a pleasant and still well appreciated addition to our programme, were started in 1959. The Junior meetings for children aged up to about twelve were begun in 1961 and still continue. For this reawakening of interest we must certainly in part thank the influence of nature programmes on Radio and Television, even if we did suffer from the late arrival at meetings of members who had been listening to the Archers. The general arousing of consciousness of the threats to the countryside and wild life also played a large part and continue to do so. We cannot expect always to ride the crest of a wave and as you have heard our membership graph has bent downwards, but attendances continue to be satisfactory and discussions lively, lectures are of a very high quality and records flow in. I think it is justified to consider that this excursion into the past ends on a note of cheerfulness and reasonable optimism.

I hope it has been of some interest in its own right, bringing back happy memories to a few and filling in an empty background for many, but what can we learn from it for the future? The main outline of our activities over nearly a century has remained surprisingly constant, though with a satisfying growth. We still meet regularly in the winter months to hear lectures by members or visitors on natural-history topics of local or broad interest or to study exhibits and engage in discussion, but the frequency of our meetings has increased, the oxy-hydrogen lantern gave way to the epidiascope, and that now has yielded place to the film projector. We still go out into the field to enjoy and to learn, but aided by modern transport or forced by creeping urbanisation we venture further, and we go out more often and in winter as well as summer. No major change is called for in these directions, I feel. We have established a journal of high standard to perpetuate the Recorders' reports and the results of members' research and observations and must strive to maintain and even improve it.

The main difference is in the type of activity. In the early years, the Victorian period, the emphasis was all on collections,

whether of pressed plants, birds' eggs, shells, stuffed skins of birds or mammals or carefully set insects. Without the reference collections painstakingly built up in those days, the precise identification that is the basis of all biological work could not have been done. You cannot make any useful observations about an organism's behaviour or associations without first knowing what it is. But this amassing of specimens must not be needlessly repeated, and much harm was done before this was realised. As early as 1918, Dr. Stansfield in his Presidential Address on "Objects of Nature Study" deprecated the making of large collections as this "often causes a local insect or plant to be exterminated".

The serious student of little-worked groups obviously must still collect. Others should turn their attention to the study of living plants and animals in their environment, for only by helping to build up a clearer understanding of the conditions that they need to thrive can we help the cause of conservation, which must be the aim of every true nature-lover in these threatening days. The recording to which I have referred is a contribution in this direction, but the need for information is boundless and the time at our disposal short.

I will quote to you a few lines from H. N. Southern's Presidential Address to the British Ecological Society in January 1969. "Knowledge about ecological processes comes only gradually and painfully. The naturalist's flair and enthusiasm are essential in helping to make realistic models of ecological systems and to adjust and refine them. We must always value the naturalist's capacity for extensive, often co-operative, investigation: demonstrated for example in the Nest Records Scheme of the B.T.O., which gives valuable comparative information about the breeding arrangements of a species on a countrywide basis over many years. Perhaps even more fundamental is the ability of a network of observers to collect and organise information about the distribution and history of species. This is a task quite beyond the more specialised research worker but may provide him with essential background knowledge. Moreover, this particular kind of cataloguing of knowledge must underlie management plans for nature reserves and for land use generally."

Here, then, I am sure, is our task. How can we best set ourselves to it? I leave you to meditate upon this problem and discuss it in its many branches. There are certainly great opportunities. We are at this moment being asked for the benefit of our local knowledge and experience in planning conservation in the proposed Loddon Recreational Park. We must anticipate that this type of call upon us will recur. There are also great difficulties. Two of the latter force themselves upon our attention - or perhaps they could be better regarded as two aspects of the same difficulty. They are the exigencies of modern life and the lack of leisure it brings in its train. People with the time to devote to regular observation in the field are scarce, but much scarcer are people with the necessary training to lead and guide them. The situation is complicated by the relation between B.B.O.N.T. and ourselves. Our roles are different and complementary. The function of the Trust is to draw on the goodwill, resources and skills of the committed - ours to cast the net wider, draw in the curious and the eager, and help, encourage and stimulate them so that they join the ranks of the committed. For this we need an ample supply of skilled leaders, and for the dwindling time and energies of such people we find ourselves heavily in competition with the Trust, which it must be our aim to help and support to the limit of our power. Help us then to recruit new members - but help us especially, those of you who have

the opportunity, to recruit leaders - and one and all give us all you can spare of your time, energies and skills and a little of what you cannot spare.

L. E. Cobb.

Bryophytes of Reading

by M. V. Fletcher

The mosses of towns, unlike the flowering plants, do not form a distinctive group. The species are few, all are native to Britain, and most grow as well away from towns. They do however form distinct communities which appear to be widespread in towns.

An account of Reading mosses seems worthwhile for two reasons. First, in Inner Reading, defined rather loosely as the area of old buildings, devoid of natural or semi-natural vegetation, the species in most habitats are so few, and their appearance so predictable, that a beginner should find their identification easy. Notes on the appearance of the commonest species are given with this point in mind. Second, some species and communities give a fair indication of the level of atmospheric pollution, especially by sulphur dioxide, and have recently attracted increasing attention for this reason.

To help beginners, the account will start by describing the poorest habitats, nearest to the centre of the town. Acrocarpous mosses, with close-packed, erect, unbranched or little-branched stems are characteristic of such places. Pleurocarps, with creeping or freely branching stems, and liverworts, are described later. The rich and distinctive Thames-side flora is well represented in the town, and is briefly mentioned near the end. No complete list of bryophytes is likely to be possible for a large built-up area, since secluded private gardens are likely to provide the richest hunting grounds. Also, while I have seen over seventy species within the Borough boundary, even this list is likely to be incomplete, and many are in any case restricted to small areas in appropriate semi-natural habitats which happen to be technically within the Borough. The selection of species mentioned is therefore a little arbitrary. Habitats which will be considered in detail include roofs and wall-tops exposed to drought and the direct impact of rainwater, damp (usually vertical) wall bases, pavement cracks, waste ground, mown turf, and moist soil, paths and brickwork among trees or sheltering walls.

COMMON ACROCARPOUS MOSSES

Walls

In central London, where sulphur-dioxide levels average 200 micrograms per cu. metre over the year at some gauges, mosses are probably absent from the tops of exposed walls. Sulphur-dioxide levels measured at the old University site in Reading averaged 70 ug. per cu. m. over the period 1962-1966. (2) Levels in parts of Reading are likely to be higher. In some areas, especially among small

close-set Victorian terrace houses, as near the Oxford Road, many brick walls appear devoid of moss. However, even here three species will soon be found. These are Ceratodon purpureus (Hedw.) Brid., which forms dull green tufts, with narrow leaves, tapering and slightly curved to one side when moist, yellow-green and twisted when dry, Bryum argenteum, Hedw., with silvery, catkin-like shoots, and Tortula muralis, Hedw., with wide, blunt leaves, ending in a relatively long white hair. It is grey and hoary when dry, vivid yellow-green when moist.

Ceratodon purpureus is the most adaptable, indeed one of the most ubiquitous British mosses, growing in many natural habitats. In towns it can colonise surfaces too barren for the other species, such as slate roofs, and can tolerate considerable shade. It is the most abundant species, for instance, under trees on the retaining wall of St. Laurence's churchyard. It can form large luxuriant masses in old gutters and similar wet but dirty habitats.

Bryum argenteum is rather rare in completely natural habitats, but abundant in towns. It seems only to flourish where dust or grit accumulates, and where intermittent waterlogging occurs. It is thus not particularly luxuriant on walls, though it can colonise the driest and sunniest places.

Tortula muralis is an uncommon plant on natural rocks, but occurs over most of the world on bricks, cement or mortar. In the centre of Reading it has a distinctive habit which suggests it may be due to acid rainwater. It is usually seen not on the tops of walls, but on the sides just below the top where much of the water reaching it has percolated through or down the mortar. It may occur among tufts of the previous species under trees, or on oolitic limestone. Around Cemetery Junction, Coley and lower Caversham it can be found in small amounts on the mortar tops of many walls, and it grows more freely among the other species where these collect calcareous cement or mortar dust. In outer suburbs, such as Woodley, this species grows freely, not only on mortar, but also on bricks.

These three species, often growing together in varying proportions, form the great bulk of the moss in all dry habitats in Reading. Dr. Gilbert, in a paper on bryophytes of Newcastle (1), describes the first two as the only ones able to survive where the annual concentration of sulphur dioxide SO_2 exceeds 170 ug. cu. m., and mentions the appearance of Tortula muralis and Bryum capillare Hedw. among them as characteristic of areas with annual average concentrations between 70-130 ug./cu. m. Other species are mentioned as beginning to occur where sulphur-dioxide levels are 40-50 ug./cu. m. In Reading other species will be found as near to the centre as Gosbrook Road, King's Road, and the top of Castle Hill. In their most urban stations, these are however confined to wall-tops of oolitic limestone, a substratum not mentioned in Dr. Gilbert's account.

Grimmia pulvinata (Hedw.) Sm. forms dense hoary cushions. The leaves, like those of Tortula muralis, have a white hairpoint, but are dark green, and appear narrower and more tapering. Capsules are usually present; when moist they are tucked among the leaves, each on a tiny curved seta. This plant is confined to walls and rocks. It will not be found on soil. There are fine colonies on the exposed limestone pillars of King's Road. It occurs on wall mortar in the Craven Road - Erleigh Road area and away from towns will colonise

brick, its behaviour thus parallelling that of Tortula muralis. There are some small fertile colonies on gritty calcareous cement at the south end of Watlington Street which have increased in the past three years.

A beginner should recognise these plants with ease. He is likely soon to encounter species of Bryum other than Bryum argenteum. So long as he looks only at the tops of walls, and in Reading, he likely to meet only two, Bryum capillare and Bryum caespiticium Hedw. Both are larger than anything described so far, with concave, translucent, dull green leaves, tapering to a short hair which is usually greenish rather than white, and arranged in a rosette. They form tufts on mortar, or sometimes a luxuriant turf on level wall-tops which hold water after rain. The leaves of Bryum capillare are broadest at the base. Bryum capillare appears to be the commoner in Reading. Typically it has leaves twisted in an elegant spiral when dry.

Orthotrichum diaphanum Brid. is an inconspicuous plant, of a dull dingy green. Through a lens the leaves are seen to have a tiny white hairpoint, and capsules, hidden among the leaves, are usually present. Most Orthotrichum spp. are epiphytes, and have become extinct or rare over most of Berkshire and Oxfordshire as a result of air pollution. Orthotrichum diaphanum has been seen in minute quantity on a willow trunk near Reading Bridge, but is far commoner on walls. Extremely small tufts have been noted on mortar near Gosbrook Road, and on a cement pillar in Watlington Street. It becomes common in Kendrick Road, preferring the shade of trees, sometimes on limestone or gritty cement wall tops, but more especially on vertical or overhung sides of walls where water trickles off the limestone cappings. Here it forms wide but patchy and rather moribund mats, unmixed with any other moss.

In Kendrick Road, Priest Hill, and more rarely in other suburbs with older houses and many trees, some pleurocarpous mosses will be seen on walls. They will be noted later.

It may seem strange that the damp brickwork at the base of walls supports a different flora. The main difference is that the source of water here is fairly constant. Tortula muralis is common in such habitats, usually at the edge of the damp areas, even in parts of the town where it is rare on the tops of walls. Ceratodon purpureus seems scarce except where there is some soil, or water runs down from broken guttering. Bryum argenteum may occur where grit is splashed up.

Leptobryum pyriforme (Hedw.) Wils. has very narrow silky green leaves, good material looking like green felt from a distance. It develops in summer, and in winter almost or quite disappears. It is rare in natural habitats, but is a common weed among potplants. Observations by my house suggest that it is damaged by the impact of heavy rain, which would account for its preference for sheltered vertical surfaces.

Funaria hygrometrica Hedw. has curious bud-like shoots that are unlikely to be noticed on damp walls until the relatively large lopsided fruit is produced. Though renowned as a colonist of ashes and burnt ground this plant will grow in a variety of moist basic conditions.

Bryum bicolor Dicks. is similar to Bryum argenteum in size, or a little larger, and not of a silvery colour. Familiarity with the

appearance of previously mentioned species of Bryum should make it possible to recognise the genus, but this species is variable. Some varietal states, especially in winter, can be recognised by their soft yellow-green colour, and by the gemmae tucked among the upper leaves, visible through a lens. It occurs sparingly on wet wall bases.

A search of damp cracks and bases of walls will reveal many colonies of Bryum spp. These may not be readily identifiable beyond the level of genus, even by the expert. Bryun radiculosum Brid. has been recorded in some towns, usually on damp sheltered limestone. I have identified material of this from a wall of the Royal Berkshire Hospital.

The mosses of pavement cracks are a selection of the species so far mentioned, though Grimmia pulvinata, Orthotrichum diaphanum and Leptobryum pyriforme will not be found, and Tortula muralis, while abundant among cement, is almost or quite absent from tarmac cracks. Ceratodon purpureus, Bryum argenteum and, in the winter at least, B. bicolor are the most abundant species.

Waste Ground

On waste ground, especially demolition sites, left bare for three or four years, there is often a substantial moss cover. The species just listed will be found, together with other unidentifiable species of Bryum, and occasionally an abundant growth of Funaria hygrometrica. Among these, and especially on ground shaded by trees, herbs or walls, some species of Barbula occur. The three species I have seen on waste ground are a bright pale green or yellow-green when slightly moist (though not when thoroughly wet).

Barbula unguiculata Hedw. has the largest leaf of the three, 2-3 mm. long, and over 1 mm. broad. Barbula fallax Hedw. has a narrower, tapering leaf, not unlike that of Ceratodon purpureus in shape. Barbula convoluta Hedw. often forms a dense carpet of tiny vivid lime-green plants on waste ground, garden paths, and bare or trampled patches in turf. A different-looking form or variety of this species, with leaves up to 3 mm. long, untidily spreading or recurved, and with wavy margins, (var. commutata (Jur.)) Husn. grows in small amounts on mortar-rich soil in my garden, and among calcareous rubble in a sheltered corner behind St. John's Church, Watlington Street. It may occur elsewhere. Other species of Barbula may occur in such places.

Ephemeral mosses characteristic of disturbed soil are very scarce in Reading, though the lack of opportunities to examine private gardens makes it difficult to generalise. I have no records of even Fissidens spp. or Dicranella spp. from gardens anywhere in Central Reading, where the loose dry soil seems unsuitable. I have one record of Pottia sp. (probably Pottia truncata (Hdew.)) from Furnr. compacted soil in Shaftesbury Road and on slightly heavier soil have seen Dicranella staphylina Whitehouse in Alexandra Road and Phascum cuspidatum Hdew., near Gosbrook Road. The only species likely to be found on garden soil are the waste-ground plants mentioned. On the heavier clays of Emmer Green or Whiteknights Park, the soil flora is richer.

PLEUROCARPOUS MOSSES

Walls

None has yet been specifically mentioned. In Central Reading, none can survive on exposed walls. Camptothecium sericeum (Hedw.) Kindb., with its glossy golden curved shoots is rare, I have not seen it in any quantity on walls nearer than Emmer Green, Dunsden and Sonning. It survives in small amounts on one wall of Reading Abbey, and on a shaded cement retaining wall in Eldon Gardens. Though characteristically a plant of walls and tree trunks, it grows vigorously on a variety of substrata at ground level where introduced in my garden in South Street. Hypnum cupressiforme Hedw. is also rare; it grows on a small section of a cement border to a garden bed in the Forbury Gardens, on a few limestone tombs in St. Laurence's churchyard, and on a few walls in and near Erleigh Road and Kendrick Road. It is a variable species and both large and small varieties are found in the last area.

Pleurocarps which are more typical of Inner Reading are restricted to a few moist and favourable habitats, such as mown turf, half buried brickwork in shady places, and sheltered tombstones and low walls. A good selection can be seen beneath the chestnuts between Reading Abbey and the River Kennet. In towns one soon becomes aware that these dull green, untidy and rather undistinguished plants come in three sizes. The large is Brachythecium r tabulum (Hedw.) B. & S., the small, with stems no thicker than fine thread is Amblystegium serpens (Hedw,) B. & S. The medium plants may give some difficulty, being either Eurhynchium praelongum (Hedw.) Hobk., Eurhynchium confertum (Dicks) Milde, or Brachythecium velutinum (Hedw.) B. & S. The first species, if at all well grown, has pinnate branches with leaves narrower than those of the main stems; the others, when not in fruit lack any clear-cut distinguishing features, though they usually look rather different. Brachythecium velutinum is the commoner in Reading, with narrower leaves arranged in a slightly flattened manner, and with stems forming neater, flatter tufts. In the site mentioned all five species grow together.

Isolated records of pleurocarps include Eurhynchium murale (Hedw.) Milde on limestone at ground level under trees in St. Laurence's churchyard, Rhynchostegiella tenella (Dicks.) Limpr. on shaded limestone debris in the Abbey Ruins, perhaps extinct after raking and tidying operations, and Leptodyctium riparium (Hedw.) Warnst. on cement garden-bed borders in the Forbury Gardens.

Turf

Dew in Central Reading is not common, and is rarely heavy, but the water transpired by short turf may be important for some bryophytes. One rather striking pleurocarp occurs in turf in several places in Reading. It is a robust form of Brachythecium albicans (Hedw.) B. & S., with silky green upright stems. I first saw this on hard litter-strewn turf in front of a hoarding in Gosbrook Road. It occurs in several similar places, and is luxuriant in exposed turf in front of Reading College of Technology.

In shady situations, mown grass may remain moist after a fine night for much of the following day, even in dry summer weather. Such conditions occur in a corner of Eldon Gardens, on parts of the Old University site, in the grounds of Reading School, and probably in

many private gardens. In these places grow several bryophytes which would be unlikely to survive in any other habitat in towns. In Eldon Gardens are Mnium cuspidatum Hedw. and Lophocolea cuspidata Limpr. In wet turf on the slopes near Alfred Sutton Girls' School, on clay soil, are Cratoneuron filicinum (Hedw.) Roth. and luxuriant Brachythecium rutabulum, looking very different from the same species in central Reading.

LIVERWORTS

Two thallose liverworts occur in the town. Lunularia cruciata (L.) Dum. is frequent, and sometimes abundant on shaded soil or paths. The small crescent-shaped gemma-cups are always present. Marchantia polymorpha L. is a larger, darker plant, with round gemma cups. It needs more moisture, and I have only seen it twice away from water, once on a wet wall by Reading bus station.

ISOLATED RECORDS

Isolated occurrences of several mosses reflect exceptional soil conditions, e.g. Polytrichum formosum Hedw. and Pohlia nutans (Hedw.) Lindb., now apparently extinct, on cindery ground in Reading Station car park, Mnium hornum Hedw., Dicranella heteromalla (Hedw.) Schp., Dicranella cerviculata (Hedw.) Schp., on damp shaded peat in my own garden (the latter at least not apparently introduced), and Polytrichum piliferum Hedw., on cindery ground by Palmer Park sports stadium. The concentration of these isolated records in places which I happen to look at closely or visit regularly suggests that other species may remain to be found in even the least promising areas.

COMPARISON WITH OTHER TOWNS

Less than twenty of the species so far mentioned are at all common in Reading. Except for Barbula unguiculata and Barbula fallax all these are mentioned by Dr. Gilbert in his paper on Newcastle bryophytes. Of the fifteen species seen here in only one site, only five were noted in Newcastle. The first species mentioned here all occur in Newcastle in the same habitats, and in the same associations (or "provisional noda" as they are described in Dr. Gilbert's paper). The only appreciable differences between the two towns, so far as the common species are concerned are as follows:-

Bryum capillare has relatively fewer stations in Reading in comparison with Grimmia pulvinata and Orthotrichum diaphanum, which are most abundant here on limestone walls. Dicranella heteromalla does not appear to occur naturally in Inner Reading. I have not seen Pohlia annotina (Hedw.) Loeske on wall bases in Reading, and M Marchantia polymorpha is rare. Both need continuously wet soil to flourish in cultivation.

These minor differences bear out my superficial impression that the moss flora of walls and roofs in cities as far apart as Belfast, Sheffield and London are very similar. The only striking departure from the Reading pattern I have seen is in Matlock, Derbyshire, where Grimmia apocarpa Hedw. is the most abundant moss on sandstone walls. The most surprising town moss I have seen is Rhacomitrium heterostichum (Hedw.) Brid. on shaded sandstone walls in the suburbs of Belfast. It grows in small amounts in a similar habitat, on a tomb in the churchyard of St. Peter's, Caversham, but is hardly likely to become common in the dry climate and appreciable pollution of most British cities.

MOSSES OF THE THAMES-SIDE

The strange tufa cushion in the Forbury Gardens fountain contains a number of mosses which are more conveniently examined by the Thames. These are Marchantia polymorpha, Barbula tophacea (Brid.) Mitt., Bryum pseudotriquetrum var. bimum (Brid.) Richards & Wallace, and and Brachythecium rivulare (Bruch.) B. & S. Bryum pseudotriquetrum var. bimum is rare elsewhere in Reading (one other record), and Brachythecium rivulare is normally confined to wet turf.

Other bryophytes seen in or by the Thames in Reading include: underwater, Fontinalis antipyretica Hedw. and Cinclidotus fontinaloides (Hedw.) P. Beauv.; on muddy cement near or above water, Orthotrichum diaphanum, Cinclidotus mucronatus (Brid.) Moenk & Loeske (abundant and increasing below the Kennet confluence), Bryum argenteum, Bryum bicolor, Leptodyctium riparium (Hedw.) Warnst., Marchantia polymorpha and Conocephalum conicum (L.) Dum; on clay banks, Dicranella varia (Hedw.) Schp., Funaria hygrometrica, Physcomitrium pyriforme, Pohlia delicatula (Hedw.) Grout and Bryum spp., including Bryum bicolor; on damp ground among stones, at the edges of towpaths, etc., Barbula cylindrica (Tayl.) Schp. and Cratoneuron filicinum (Hedw.) Roth.; on dry, shaded, vertical silted cement at Mill Green, Tortula latifolia (Bruch) Hartm.

This list is not exhaustive, and there seems no reason why any Thames-side bryophyte should not be found in Reading, given a suitable habitat.

MOSSES, AIR POLLUTION AND HUMAN HEALTH

The similarity between the very restricted moss flora in various towns has long suggested that some limiting factor is at work. The bulk of the evidence suggests that pollution by sulphur dioxide and acidification of rainwater are the main factors involved. Traffic fumes in Reading seem unimportant; King's Road and London Road are as rich in mosses as the quiet side streets around Cemetery Junction. Epiphytic mosses seem most sensitive to sulphur dioxide; in Tilehurst, Caversham Warren and Emmer Green a few occur on sheltered tree trunks near the ground. In Alexandra Road Hypnum cupressiforme grows on the boles of a few lime trees, and the cushions of Dicranoweisia cirrata (Hedw.) Lindb. become more abundant as one climbs the hill towards Upper Redlands Road. At the top of Kendrick Road two elms carry colonies of Dicranoweisia cirrata on their exposed trunks to a height of 5 metres. This is a surprising and isolated occurrence, though the whole area of wooded suburbs sloping up from London Road to Christchurch Green is richer than those surrounding it on all sides. It contains one other moss worth mention, Tortula intermedia (Brid.) Berk., in small amounts among other mosses on at least three limestone walls or pillars.

Reading has an average relative humidity which is among the lowest in the country. (2) The theory that the dry air of towns accounts for the poverty of their moss flora seems unsound after a comparison of the mosses of Reading and Newcastle. Reading, with drier and probably cleaner air, has, if anything, a slightly richer moss flora on exposed wall-tops. The popular idea that there is a connection between high humidity in the Thames Valley, and a high incidence of some illnesses, especially bronchitis and sinus trouble, seems equally unsound. Despite the growing awareness of connections between air pollution and human health, many gauges are placed in irrelevant

sites, and it is to the common mosses of towns that one may turn for supplementary evidence. They have taken up the bulk of this account, and their value as indicators should commend their study to more than a small number of specialists. They do not throw much light on any possible link between health, humidity and air pollution in Reading, but suggest two things: that there are substantial differences between the lowest areas of the town, and others nearby and only slightly more elevated; and that a tree cover can modify local humidity, sulphur-dioxide levels, or both, by a large amount.

Though responsible for the final version of this account, and for any errors or imperfections it may contain, I am indebted to Dr. E. V. Watson, for his detailed revision of the manuscript, for many suggestions and comments which have been incorporated, and for his encouragement and assistance in the study of bryophytes over a period of several years.

References

(1) Gilbert, O. L. (1971). Urban bryophyte communities in North-East England. Transactions of the British Bryological Society, 6, p. 306.

(2) Bowen, H. (1968). Flora of Berkshire, especially pp. 23-25 and pp. 320-322.

(3) Watson, E. V. (1959). British Mosses and Liverworts, Cambridge, University Press.

(4) British Bryological Society. Census Catalogue of British Mosses, 3rd. Edn.

Pigmented Progeny Produced by Two Albino Frogs (Rana temporaria. L.) and Two Successful Back Crosses

by Arthur Price

One would reasonably expect that, genetically, a frog with pink eyes and pink skin should be cc, i.e. double recessive for albinism. Two consecutive matings in 1971 and 1972 have proved that this is not always so. The mating of a 1967 cc female frog and Mickie, a male with pink eyes and pink skin was repeated in 1971 and 1972. In the spring of 1971 this mating produced 140 ml of white spawn, 95% of which was fertile. All the resulting tadpoles pigmented as they developed, a result which I found inexplicable. Interference by another male was suspected but hardly thought possible.

In the spring of 1972 the mating was repeated under conditions which made interference by another male impossible. Mickie was the

only mature male in the Froghouse. On 17th March 1972, 170 ml white spawn, 95% of which was fertile, was laid. Again all the tadpoles pigmented as they developed. The female had already proved herself to be a double recessive on two occasions when she was mated with the 1967 cc male (Price, 1970, 1971). The unexpected results can therefore be directly attributed to Mickie who according to the 1971/72 results might be CCww; his offspring (CcWw) would become coloured through complimentation. During discussions on this unexpected result more than one person has suggested that more than one gene might be responsible for the albinism.

Mickie's parentage is unknown as he was caught, by Paul Huggins, in Caversham Park in 1967. Price reported in Reading Naturalist No. 24 (1972) that pigmented tadpoles had lost their melanin and become frogs with pink eyes and pink skin. Even assuming that this happened in Mickie's case the genotype should not have changed. Mickie has now died and has been pickled in 4% formalin.

Mickie's genetic make-up explains earlier unexpected results obtained when the female frog Marfer, his daughter, was mated with the 1967 cc male in the spring of 1971 (Price, 1972). The male had already proved himself to be cc but Marfer's only claim to be a single recessive for albinism (Cc) rested upon Mickie proving to be cc. This has now been disproved. Therefore Marfer must have been a double dominant (CC). This would account for the pigmentation of the tadpoles.

In the spring of 1972, two successful back crosses were made using two of the 1968 cc females which had been bred from white spawn collected in the Highmoor Road pond in 1968. The males, which were expected to be Cc, resulted from the mating in 1970 of another of the 1968 cc females with 1968/ 10, a pigmented male, which although it had developed from white spawn, must have been CC.

The two successful matings were:-

Q Spawn. 1968 cc female No 1 X 1970 Cc male No 1

This resulted in white spawn, 90% fertile, which gave 285 tadpoles that pigmented as they developed and 278 pink tadpoles.

R Spawn. 1968 cc female No 2 X 1970 Cc No 2.

This resulted in 100 ml white spawn, 90% of which was fertile, which gave 226 tadpoles that pigmented as they developed and 226 pink tadpoles.

These results confirm the forecast of Cc male X cc female = Cc + Cc + cc + cc in both matings and proves that the 1970 pigmented stock must be Cc and that the 1968 female pink frogs must be cc.

Some of the tadpoles, both pink and pigmented, which resulted from these back crosses, were given to Mr. W. A. Smallcombe and to Pat Smallcombe who is setting up a vivarium under close control in her garden in Wychwood Crescent, Earley. Dr. I. W. Whimster of St. Thomas' Hospital, S.E.1 collected thirty pigmented and thirty pink tadpoles from Q Spawn on 31 March 1972 and a similar number from R Spawn on 29 April. More will undoubtedly be heard later of these tadpoles and the resulting frogs.

Both the pigmented and the albino frogs are vigorous and healthy; very few are distorted. All my pigmented frogs of both these matings have been placed in the Froghouse to serve as future breeding stock. Twenty-two of the albinos of Q and R spawn are doing well in a tank on my study desk. Eleven of them exceed 30 mm in length, the largest being 34 mm long in early October. They will be allowed to overwinter on my desk.

The Matriarch, when almost certainly thirteen years old in the spring of 1972, was mated with a pigmented male bearing the characteristic black patches, from the Highmoor Road pond. This male in deference to the Matriarch's age was called The Gigolo. The object of persisting with the Matriarch is to establish the age at which a female frog ceases to lay fertile spawn and to establish the age of the Matriarch when she dies. We must admit that the conditions are very favourable. On 17 March 1972, 450 ml white spawn containing two black eggs was laid and 95% of this was fertile. The resulting frogs were released in suitable habitats as they metamorphosed.

The pink frogs bred from 1968 cc female and the 1967 cc male in 1970 have not matured. Only one is still alive and it is not expected to survive the winter. Four of the pink frogs bred from a 1968 cc female and the 1967 cc male in 1971 are doing well. Two females, one 58 mm long and 20 g in weight and another 50 mm long and 13.3 g in weight could breed in 1973. One male has been identified but he is slow growing. The 1967 cc male died on 2 March 1972 whilst Mickie died on 25 August. We are therefore left with only the 1970 single recessive males for breeding in 1973.

Thanks are due to a great number of people, including Mrs. A. C. E. Holt of Reading University (Zool. Dept.) and Mr. T. Riordan of 14 Mansfield Road whose cabbages and compost have supplied many meals for hungry frogs.

Summary.

1. Mickie, a male with pink skin and pink eyes when crossed with a proven full albino frog produced offspring 100% of which pigmented.
2. The Matriarch now thirteen years old produced fertile spawn.
3. Only one clump of white spawn was laid in the Highmoor Road pond in 1972.
4. Only single recessive males are available for breeding in 1973.

Bibliography

Price, A. Reading Naturalist Nos. 19 (1967), 20 (1968), 21 (1969), 22 (1970), 23 (1971) and 24 (1972).

Whimster, I. W. 1971. The Group Behaviour of Pigment Cells. A Comparative Study. Transactions of the St. John's Hospital Dermatological Society, Vol. 57.

A Chub (Squalius cephalus L.) Eats Frogs (Rana temporaria L.)

by Pat Smallcombe

We had had the fish for several years. It had come with a collection of minnows (Phoxinus phoxinus L.) which the children had caught in the River Kennet and placed in an aquarium in our house. It differed from the minnows both in shape and colour and was the only fish to survive a very hot summer when the temperature rose too high for the minnows.

When, in 1963, we had dug and cemented a pond twelve feet long and four feet broad, our fish which was now three inches long, was placed in it. It lived there very successfully without receiving any food from us.

Although we had not kept accurate records we think that it must have been in 1965 that the local frogs began laying their spawn in our pond. The fish was getting bigger and was accompanied around the pond by a goldfish which we had placed there. We congratulated ourselves on having achieved a state of equilibrium in the pond. During the spring of 1965 as many as sixteen pairs of frogs were in amplexus and a few unattached males were croaking and splashing about. The fish were healthy and both Palmate Newts (Triturus helveticus L.), and Smooth Newts (Triturus vulgaris L.) were coming to breed in the pond. None of these animals required feeding by us and the pond remained sweet and clean.

Conditions in the pond remained stable for five years during which time we had added a number of tadpoles given to us by Mr. A. Price. These tadpoles although normal in appearance had hatched from white frog spawn and carried a recessive gene for albinism.

In 1971 we were paying particular attention to the pond during the frog breeding season because our first clump of albino frog spawn had been laid there. All the resulting tadpoles pigmented. We were, however, distressed to find a frog with a large piece missing from one side of its face. One of my neighbours had seen a Heron (Ardea cinerea L.) in our garden the previous year and we thought that this bird might have been responsible. The next day there was another dead frog on the bottom of our pond with one of its legs missing. This happened again the next week and we were mystified.

I think that the mystery would have remained unsolved had I not noticed a couple of mornings later that our fish, which had now been identified as a Chub and was about a foot long, was excreting a large amount of frog skin and bone. The Chub was undoubtedly the culprit. For most of the time the fish and frogs had lived in harmony. The frogs swam by the fish without showing any signs of fear bur occasionally the fish would snap, and with its large white mouth remove and devour a limb from one of the frogs.

The same thing started to happen in 1972 in spite of our efforts to separate the frogs and fish with wire netting. The fish was now too big for the pond so we decided to catch it - this required a great effort as its girth was so great that it needed both hands to encircle it. We eventually transported it, in a large container, to a local gravel pit where there were plenty of birds and no fishermen and released it. The fish swam without hesitation straight away from

the bank, and, as far as we could observe, followed the contours of the bottom of the pit not inhibited by its previous environment.

Report on Aston Upthorpe Reserve - 1971-72

by M. R. W. Sell

1971

A mild spell in February enabled the usual small band of volunteers to cut the grass on the Reserve, this year about 2/3rds of the total area being cut by 'Flymo', and a patch at the bottom end carefully cleared by burning. In all, practically the whole of the Reserve has now been cleared of the matted grass at least once, and in some areas two or three times, in the past three years. It was interesting to note the varied results in different areas during the past season - the parts which had already been cut twice or more tended to have a thicker crop of Bromus erectus than those which had been cut for the first time in the spring. The main point of interest, however, was the area that had been burnt, where a magnificent show of Polygala calcarea (Chalk Milkwort) was to be seen, and B. erectus was very considerably diminished. Another feature of this particular area was a large colony of Primula veris (Cowslip). This has been much more in evidence since the clearing of the grass, some of which was an accumulation of eight or nine years' growth.

Anemone pulsatilla (Pasque flower) again had a very poor year, as far as flowering plants were concerned - there were only nine flowers in the small enclosure, and two outside, but once again, plenty of young plants were in evidence in the vicinity. Flowering this year was towards the end of April. The Short-eared Owls also stayed in the valley until well into April, a maximum of five being seen this winter in Juniper Valley.

By mid-May, one of the best displays yet of Polygala calcarea was to be seen on the Reserve, and there are encouraging signs of the rejuvenation of Hippocrepis comosa (Horseshoe Vetch), although not nearly in the quantity needed to attract the Adonis Blue back to the valley.

In early June, Iberis amara (Candytuft) was starting to flower and Senecio integrifolius (Field Fleawort) once again made a very good display. There were at this time eleven flowering spikes of Orchis ustulata (Burnt-tip Orchid) on the Reserve, but as many as eighteen outside, this species having a better year than in 1970. By this time, also, a marked increase was noticed in the appearance of H. comosa, probably attributable to mowing, as in previous years it has not been able to compete with B. erectus. Also noted was a small colony of Cerastium arvense (Field Mouse-ear), not actually on the Reserve but by the approach gate.

At the end of June, twelve flowering spikes of Coeloglossum viride (Frog Orchid) formed a little group at a new point in the Reserve - a

most encouraging sign - and there were three plants of Ophrys apifera (Bee Orchid) in flower, an increase on previous years.

Most other plants had a fairly good season, but mention must be made in particular of the large number of plants of Gentianella amarella (Felwort) flowering in September, as well as a large number of Campanula glomerata (Clustered Bellflower).

Birds noted on the Reserve in 1971, apart from the Short-eared Owls, have included Spotted Flycatchers, Turtle Doves, Tree Pipits and the resident Kestrel. A migrating Curlew was also seen flying over in late March.

Summing up, it would appear that the regular grass-cutting has had beneficial effects on most plant life. How frequently it needs to be done is a question not so readily answered, however. The picture has been altered this year, too, by young cattle grazing in Juniper Valley in July, August and September, for about two weeks at a time. They appear to have had no harmful effect on the flora, however, although they were on the Reserve itself during this time. The last dates were in October, and there has been no more grazing since then. It was hoped that the new lessee of the grazing rights would be putting sheep in the valley, but these have not materialised, and it is now understood that this is highly unlikely. More intensive grazing with cattle is probable in 1972, and these are likely to be older and therefore heavier animals. It is probable that they will require the whole of the valley, including the Reserve, for grazing, but arrangements will be made with the lessee to keep them off the Reserve as long as possible during the flowering season.

During 1971, only three days were spent grass-cutting and 'tidying up', and in future years it is probable that one or two days in early March will suffice. The effects of different treatments for different parts of the Reserve will continue to be kept under close observation.

1972

The year started quite eventfully, with eleven Short-Eared Owls being spotted on a N.H.S. walk on the Downs in early February, more than the writer has seen before in this area.

The Berks., Bucks. & Oxon Trust having acquired its own 'Flymo', a handful of stalwarts braved the bitter cold weather early in March, starting the annual mowing in a blizzard! Only a small portion was cut on this particular day, but on the following day, with the loan of a second 'Flymo', the whole Reserve was cut completely, apart from the very rough bit at the bottom corner, which was burned early in 1971, and which was too rough even for a 'Flymo' to tackle. The other area left was a small strip below the rabbit holes in the middle of the Reserve. With the effective control which is now exercised over Bromus erectus, there was only a minimal amount of grass to be raked off, including that which had to be cut by hand round the small enclosure and individual small Juniper trees (Juniperus communis).

The state of some of the Junipers in fact gives rise to concern, as some of the young trees are not doing particularly well. Whether this can be put down to the succession of mild winters, followed by cold spring and early summer weather, is a matter for speculation, but

it is evident that they seem to do much better on the east (and therefore colder) slope of the valley than on the Reserve side. Some of the smallest trees had in fact died since last year, and it is not known to what this can be attributed.

After a very mild spell at the end of March and beginning of April, four Pasque Flowers were in bloom on April 4th, and a further sixteen buds inside and six outside the small enclosure were to be seen, including five on a large plant by the top outside fence, which plant flowered last in 1970. Also seen were three Slow-worms, sunning themselves on the Reserve, and the resident Kestrel was also in evidence. By the end of April, when a new sign was put up outside the Reserve, there were twenty-one blooms to be seen on various plants, mostly inside the small enclosure, but some of these had been subject to rodent attack, although the area is supposedly proofed to such intrusions. Vole or mouse runs were discovered inside the small enclosure when mowing earlier in the year, and these appeared to be still in use.

There were quite a number of young non-flowering plants of Anemone pulsatilla to be seen outside the small enclosure, and despite the reversion to cold weather during April, a number of plants of Polygala calcarea were in bloom already. The display of this plant this year was equally as good, if not better than last year, and included a number of white and pink specimens.

By early June, cold winds notwithstanding, an amazing number of plants of Orchis Ustulata could be seen, a total of eighty flowering spikes being complemented by another one hundred and six outside the Reserve above the main enclosure, although one isolated plant was flowering outside the bottom fence on the floor of the valley. Senecio integrifolius appeared in about the usual numbers, and at this time A. pulsatilla was in seed in the small enclosure, twenty seed-heads in total.

In mid-July, one of the finest displays yet seen of Filipendula vulgaris was observed, and this year Coeloglossum viride produced no less than fifty-three flowering spikes, and there could well have been more. This is more than four times the number in 1971, and they appeared on four different sites within the Reserve, a most encouraging sign. There were also two plants of Ophrys apifera in bloom, and where rabbits had excavated their burrows, in many places, there were patches of Iberis amara in flower. There was certainly more evidence of rabbit activity this year, and it appears that in certain areas Bromus erectus is actually being controlled by them, as it once was before the onset of myxomatosis. The grass was much shorter than last year, and it is not thought that this was entirely due to the cold weather from April until the beginning of July. Patches of Campanula glomerata were beginning to come out by this time, but not as good a show as the previous year.

Quail have been heard and seen in Juniper Valley this summer, and Stone Curlews have been calling in the vicinity. At least one Kestrel has been seen fairly regularly, but not as often as in previous years, nor were there any signs of a family party, as in 1970.

The farm manager's post has yet another occupant, and this year no grazing has been done in Juniper Valley at all, although the adjacent valley had a large herd of young cattle for part of the summer, at least. It will be interesting to make a comparison with the effects of grazing on the flora in 1971, and the overall growth of B. erectus.

The Recorder's Report for Entomology

1971 - 72

by B. R. Baker

By comparison with previous years we have received, or personally made, few observations for the year under review, and if one scans the monthly weather records kindly supplied by the Department of Geography, Reading University, the reason for insect scarcity becomes self-apparent. In praise of Spring and Summer 1972 we quote:-

"March, sunniest and warmest since 1967, and wettest since 1964. April, warmest since 1967. May, coolest since 1968 and dullest since 1969. June. This was the coldest June since reliable records started at the University in 1921 and the first time in that period that a day maximum of 21.1°C (70°F) has not been reached. July, dullest since 1968. August, coldest since 1968. September, the coldest since 1952."

It is small wonder therefore that for some Orders no observations have been made, others receive scarce mention, and only for the Lepidoptera has it been possible to assemble much information.

Order Odonata (Dragon-flies)

Libellula depressa L. Broad-Bodied Libellula

A female of this species was brought to the Museum by Mr. P. Maynard on 9th June, having been found in the vicinity of Hartland Road, and a male was taken at Fence Wood on the late date of 16th July.

Order Neuroptera (Lace-wings)

Osmylus fulvicephalus (Scop.) (Giant Lace-wing)

This elegant lace-wing has frequently received mention in our records in previous years, but all observations have related to Pamber Forest, Hampshire, where the insect is to be found resting either under small bridges or amongst streamside vegetation. It is therefore noteworthy that in 1972 Berkshire has produced a record for fulvicephalus, this being from thick hazel cover bordering a stream in woodland at Padworth on 2nd June.

Order Hemiptera (Plant-bugs, Leaf-hoppers, Aphids, etc.

Ledra aurita (L.)

A nymph of this strange-looking insect was noted at Padworth on 2nd June. It provided a remarkable example of protective resemblance, being clamped flat on to a slender stem of hazel, and was proved to be non-plant tissue only by gently touching the creature with a grass stem and inducing movement.

Heterogaster urticae (F.) Nettle Ground Bug

Mr. Arthur Price has submitted a detailed note on this species in 1972, his last comments being noted in Reading Naturalist No. 19 (1965-66), but both sets of observations concern journeys made around Reading when the primary quest has been to find food for Mr. Price's special strain of Amphibia. Overwintered adults of H. urticae may be found in dense swarms in mid-summer - they congregate upon the upper parts of nettle patches where pairing takes place. A second brood of

adults appears in September - these examples will overwinter.

Mr. Price observed the following numbers:

June. 2; 26; 28. July. 1; 2; 4; 10; 12; 16. August. 9; 22; 23; 27;

September. 2; 4; 6; 8; 12; 17; 18; 20; 25. October. 14th 24; 22; 6.

Mr. Price refers particularly to an observation of the 9th August - "tens of thousands of these bugs were found in the pit (a sandpit along Elgar Road) on the tops of nettle, on the ground under old sacking, on the ground itself, and on old linoleum. The insects appeared to consist of late-instar individuals and mature adults".

Mr. Price promises to keep records next season of the stage of development of his captures and these should provide interesting data illustrating the period when adult H. urticae are to be found.

Order Hymenoptera (Saw-flies, Bees, Ants, Wasps, etc.)

The following list of Saw-flies taken in 1972 has been supplied by our President:-

Athalia bicolor Lepeletier.	female Goring Heath 18.5.72. (HHC)
Dolerus sanguinicollis (Klug.)	male Goring Heath 18.5.72 (HHC)
Periclista pubescens (Zaddach).	female Goring Heath 11.5.72 (HHC) - new to Oxon.
Anoplonyx destructor Benson	female Goring Heath 11.5.72 (HHC)
Eriocampa ovata (L.)	female Wokefield Common 20.6.72 (HHC)
Aneugmenus temporalis Thomson	female Wokefield Common 12.7.72 (HHC)
Tenthredo mandibularis F.	male Woolhampton 20.7.72 (EB)
Stigmus solskyi Morawitz.	female Reading 14.7.72 (EB)

Urocerus gigas (L.) Greater Horntail

A specimen was brought into the Museum on 18th August having been discovered in the vicinity of Messrs Huntley & Palmers Biscuit Factory. As this impressive insect is normally an inhabitant of conifer plantations where the larvae mine within the trunks of the trees, we presume the H. & P. specimen to have emerged into an unfavourable habitat from some piece of softwood which had become part of some rough-timber support-structure.

Order Lepidoptera (Butterflies and Moths)

Early Appearance of Hibernators

The brilliant sunny weather of March induced a welcome show of our overwintered butterflies.

14th March Gonepteryx rhamni (L.) Brimstone and Aglais urticae (L.) Small Tortoiseshell observed flying over town gardens.

15th March Brimstones seen at Bearwood (B.T.P.); also Polygonia c-album (L.) Comma and Nymphalis io (L.) Peacock Butterfly.

23 March. Polgonia c-album (L.) Comma Butterfly

Along one stretch of woodland ride at Padworth eight of these butterflies were counted within the space of half an hour. Flight was rapid but brief, the insects preferring to settle upon the carpet of dead leaves and bask in the sun.

Notes on Immigrants

Vanessa cardui (L.) Painted Lady

Scanty records only; one on 17th August and one on 23rd September, both being observed in a Caversham garden.

Vanessa atalanta (L.) Red Admiral

Not observed until 10th September (Southcote). One on 22nd September, Caversham garden and a final example on 30th September above The Warren, Caversham.

Notes on Residents

Euchloe cardamines (L.) Orange Tip

Appearing well on time by 1st May (Caversham) but emergences delayed by subsequent cold weather with the result that butterflies could still be seen in Pamber Forest as late as 16th June. Eggs discovered on Cruciferae at Sonning Eye on 19th May (B.T.P.); also observed on a flowering hedgebank at Caversham, 28th May.

Pieris rapae (L.) Small White

This species, one of the earliest to hatch in the year, is the subject of two very contrasting records. On the evening of 2nd April a newly hatched butterfly was noted clinging to the base of a wall near the Town Centre, the weather being cold with heavy rain falling. By contrast Mr. Leeke reports a completely out-of-season hatching of this butterfly on 11th December, but the caterpillar must have wandered into Mr. Leeke's house, pupated in a warm corner, finally producing the butterfly which he discovered sitting on a hat!

Maniola jurtina (L.) Meadow Brown

Generally considered a common species but noted in extraordinary abundance in Moor Copse Nature Reserve on 22nd July, forty specimens being counted on a clump of willow herb.

Melanargia galathea (L.) Marbled White

Fairly common on Watlington Hill, 24th July (B.T.P.)

Apatura iris (L.) Purple Emperor

A larva found on 5th May and a male butterfly seen over oaks on 20th August, both records from Pamber Forest. The capture of a female iris on 11th August is reported by Mr. R. L. Leeke, the locality being a field at Beenham. Records of this fine butterfly from areas other than Pamber Forest are particularly valuable.

Limenitis camilla (L.) White Admiral

This species again had a very good season at Pamber Forest and at Padworth; at both localities it was still on the wing at the late date of 20th August. A specimen is also reported from Sulham Wood where it was seen flying around conifers on 10th August by Z. Karpowicz.

Argynnis paphia (L.) Silver-washed Fritillary

Several reported from Pamber Forest on 19th July (B.T.P.), the dark variety valesina was observed on more than one occasion in the same locality (S.R.A.). A. paphia also had a splendid season at Padworth though the dark variety was not seen there during several visits to the locality.

Argynnis aglaia (L.) Dark Green Fritillary

Watlington Hill, 24th July. (B.T.P.)

Thecla betulae (L.) Brown Hairstreak

Mr. S. R. Anthony has submitted some intriguing notes on this species which he observed near his home at Baughurst - he writes "I was very surprised to find the Brown Hairstreak quite plentiful near my home in late September". He also mentions seeing the species in Pamber Forest and in Wasing Wood. I have looked over his original locality, a length of hedgerow bordering a road and noted that sloe (the food plant of the Brown Hairstreak) is present, though not abundant as in other betulae localities that I have seen. Without doubt this species has been overlooked, especially so in one area which we thought we knew well, and the records serve to remind one that late September affords possibilities of seeing species equal in interest to those we annually watch for in June and July.

Strymonidia w-album (Knoch) White-letter Hairstreak

A single specimen observed at close quarters in Moor Copse Nature Reserve on 22nd July. This is a first record for the Reserve.

Thecla quercus (L.) Purple Hairstreak

Seen on several visits to Pamber Forest in July and August where I last observed it on 20th August. Mr. Anthony reports that quercus was still to be seen in September. The butterflies are usually seen flying in little groups making quick, circling inspections of the oak crowns, occasionally an individual butterfly (usually a female) is seen at ground level. Mr. Parsons reports a specimen settling on his bicycle basket when he visited Pamber Forest on 31st July.

Celastrina argiolus (L.) Holly Blue

Scarce by comparison with recent years: one seen at Caversham on 3rd May and one at Thatcham on 9th May. No records of the second brood.

Moths

Hyloicus pinastri (L.) Pine Hawk-moth

Records of this fine hawk-moth are always welcome, especially

when they relate to observations within the Borough. Hawk-moths, after their night flight, sometimes rest in fairly exposed positions where they may be seen during daylight hours and on 13th August Anne Baker picked up a fine male Pine Hawk which was at rest on the pavement edge at the top of St. Peter's Hill, Caversham. The specimen was released after dark on the same date.

Sphinx ligustri (L.) Privet Hawk-moth

Eggs found at Gatehampton on 10th July (B.T.P.)

Laothoe populi (L.) Poplar Hawk-moth

Eggs found at Sonning Common on 21st June, and at Whiteknights Park on 24th June. (B.T.P.)

Smerinthus ocellatus (L.) Eyed Hawk-moth

Eggs found at Beech Lane, Earley, 4th July, and at Bramley Corner, on 10th July. (B.T.P.)

Odontosia carmelita (Esp.) Scarce Prominent

4th May at Goring Heath, two examples taken at mercury-vapour light, one of them being a female; (for many species it is generally true that females are far less attracted to light than males).

Gastropacha quercifolia (L.) Lappet moth

25 August - 4th September at Gypsy Lane, Earley, six small larvae and eggs, or parts of eggs, totalling about forty discovered on small blackthorn bushes with a single egg on willowherb. Most of the eggs appeared eaten by some predator. (B.T.P.)

Procus versicolor (Borkh.) Rufous Minor

21st July at Goring Heath. A single example at light. This appears to be a first local record for this species which can easily be confused with other Minors. Identity checked by genitalia examination.

Schrankia taenialis (Hubn.) White-line Snout

21st July at Goring Heath. A single example at light.

Schrankia costaestrigalis Steph. Pinion-streaked Snout

21st July at Goring Heath. A single example at light.

Order Diptera (True Flies)

The detailed list relating to this Order has been submitted to the Recorder by our President, Mr. H. H. Carter and embodies records made on behalf of Dr. E. Burtt and Mr. Carter himself. All the species listed have not previously been included in the Reading Museum Diptera Collection.

Tipulidae.

Nephrotoma cornicina (L.) male, 2 College Rd. Reading 6.7.71 (EB)

Tipula pseudovariipennis Czizek. males and a female, Goring Heath

15-22.5. various years from 1965 onwards (EB). (These had been wrongly determined at the British Museum until revealed by a check on the male genitalia this year.)

T. montium Egger. — males and a female at Aldermaston 27.7.72 (HHC).

Diogma glabrata (Meigen) — males, Wokefield Common 12.7.72 and 18.7.72 (EB)

Limonia macrostigma Schummel. — males and a female, Wokefield Common, 15.6.72 (HHC).

Erioptera (Ilisia) maculata (Meigen) male, Goring Heath 22.7.71 (EB)

E. (I.) occoecata (Edwards, F. W.) female, Goring Heath 30.5.72 (HHC)

Gonomyia lateralis (Macquart). — female, Woolhampton 20.7.72 (HHC)

Chironomidae

Cricotopus triannulatus (Macquart). male, 2 College Rd. Reading 17.4.72 (HHC)

C. sylvestris (F.) — female, Reading 14.5.72 (EB)

Chironomus fuscipennis Meigen. — male, Wokefield Common 13.6.72 (HHC)

Psychodidae.

Pericoma pilularia Tonnoir. — abundant, Goring Heath 23.3.72 (HHC)

Stratiomyidae.

Microchrysa cyaneiventris (Zett.). females, Reading 25.7.72 and Aldermaston 27.7.72 (EB)

Syrphidae.

Syrphus arcticus Zett. — male, Nuney Green 6.5.72 (EB)

Chrysogaster hirtella Loew, H. — female, Wokefield Common 8.6.72 (HHC)

C. chalybeata Meigen. — female, Wokefield Common 19.8.69 (EB) - re-determined

C. virescens Loew, H. — female, Wokefield Common 22.6.71 (EB)

Heringia heringii (Zett.). — females, Goring Heath 15.5.71 (EB)

Myolepta luteola (Gmelin). — male, Wokefield Common 12.7.72 (J. W. Spencer)

Tachinidae.

Hebia flavipes Robineau-Desvoidy. female, Goring Heath 9.5.72 (HHC)

Zenillia fimbriata (Meigen). — male, 2 College Rd. Reading 8.5.72 (EB)

Arrhinomyia innoxia (Meigen). — male, Wokefield Common 29.6.72 (HHC) - an uncommon species.

Calliphoridae.

Brachycoma devia (Fallèn). — female, Wokefield Common 6.7.72, male, Aldermaston 27.7.72 (HHC)

Ptychoneura rufitarsis (Meigem). — male, 2 College Rd. Reading 16.6.72 (EB)

Sarcophaga barbata Thomson.	pair in cop., Reading Town Hall 7.6.72 (HHC) - new to Berks.
Pollenia excarinata Wainwright.	male, Woolhampton 20.7.72 (HHC)

Muscidae.

Drymeia hamata (Fallen).	female, 2 College Rd., Reading 17.7.72 (EB)
Mydaea ancilla (Meigen).	males, Goring Heath 9.5.72 and 27.5.72 (EB) - new to Oxon.
M. nebulosa (Stein).	male, Goring Heath 11.5.72 (EB)
Fannia atra (Stein).	female, Wokefield Common 12.7.72 (EB)
F. manicata (Meigen).	males, 2 College Rd., Reading 15.4.72 (EB)
F. nitida (Stein).	female, 2 College Rd., Reading 19.7.72 (EB)
F. postica (Stein).	male, 2 College Rd., Reading 19.6.72 (EB)
Spilogona denigrata (Meigen).	males, Wokefield Common 24.6.72 (EB)

We acknowledge our indebtedness to the Director of Reading Museum for allowing us every facility to incorporate such Museum records as we wished, and also express our best thanks to the following contributors:

Mr. S. R. Anthony
Miss Anne Baker
Dr. E. Burtt
Mr. H. H. Carter
Mr. Arthur Price
Mr. B. T. Parsons
Mr. R. L. Leeke
Mr. R. Leeke
Mr. Z. Karpowicz

The Recorder's Report for Vertebrates 1971 - 1972

by H. H. Carter

Fish.

Esox lucius L. Pike	Breeding in pond at New Farm, Mapledurham (AB). Sutton Courtenay Gravel Pit (see Reading Mercury 30.12.71) taken by Paul Smith. Common in R. Lambourn (JFW).
Cottus gobio L. Bullhead	Two at Loddon Bridge 7.8.72 (David Trevenna). Common in R. Lambourn (JFW).
Gasterosteus aculeatus L.	Three-spined Stickleback. In pond at New Farm (AB).

Salmo trutta L. Trout — Common in R. Lambourn (JFW).

Thymallus thymallus (L.) Grayling. Common in R. Lambourn (JFW).

Nemacheilus barbatula (L.) Stone Loach. Common in R. Lambourn (JFW).

Anguilla anguilla (L.) Eel. Present in R. Lambourn but uncommon (JFW).

Lampetra planeri (Bloch) Brook Lamprey. Common in R. Lambourn (JFW).

Amphibia.

Triton cristatus Schr. Great Crested Newt. Dead Man's Pond, Whitley Wood, March (KR).

Triturus helveticus (Raz.) Palmate Newt. Males at Arborfield Common Pond 9.4.72 (GN).
Torpid male under corrugated iron near overgrown ponds in Clay Copse, Tilehurst 26.8.72 (ZZK).

T. vulgaris (L.) Smooth Newt. Several in ditch near cork factory, Caversham, 8.7.72 (KR).

Rana temporaria L. Breeding in pond at New Farm, Mapledurham (AB).
About twenty killed on roads in Tilehurst during spring migration; maximum 7, 9.3.72; last date 23.3.72 (ZZK).
A large female found injured on path beside Widmore Pond, Sonning Common, 6.10.72, was placed in the pond but found dead shortly afterwards.

Bufo bufo (L.) Toad. Breeding in pond at New Farm, Mapledurham (AB).
Two females at Dead Man's Pond, Whitley Wood, 27.3.72 (KR).
A pair in amplexus, Thatcham Marsh, 29.3.72 (ZZK).

Reptilia.

Anguis fragilis L. Slow Worm. One caught by cat at Thatcham, 14.6.72.
One at Burghfield in 1971.

Lacerta vivipara Jacquin Lizard. Seen in Aston Upthorpe Nature Reserve, 11.5.72 (EMT).
Two in garden of "Rising Sun", Burghfield Common on pile of grass cuttings, 8.6.72, one there 15.6.72.
One on a window sill in Woodley where the species is common, 26. 9.72 (GN).

Natrix natrix (L.) Grass Snake. Present at pond near New Farm, Mapledurham (AB).
In Sulham Woods, June 1972 (EMT).
Top of New Lane Hill, Tilehurst, where the species occurs frequently, 13.7.72 (Mrs. Midwood).
One in Reading, 25.7.72.
Two young ones 150 mm (6 inches) long at Burghfield, 27.7.72.

Vipera berus (L.) Adder — One at Wokefield Common, 18.7.72.

Mammalia.

Insectivora.

Sorex araneus L. Shrew. One on hedgebank at Hall Place Farm, Tilehurst, 14.3.72; one found dead on Pincent's Hill, Tilehurst, 28.8.72; shrews probably of this species opposite Hill Copse, Tilehurst, 19.4.72 and in Barefoots Copse, Sulham, 25.4.72 (all ZZK).
One trapped at Moor Copse Nature Reserve, 12.4.72 (RMC).
Two at Crowsley, 15.3.72. One at King Charles's Head, Goring Heath, 17.4.72 and 18.5.72. One at Bishopsland Farm, Dunsden, 20.4.72 and 7.6.72. One at Chalkhouse Green, 6.5.72.

Talpa europaea L. Mole Numerous records of fresh molehills and dead moles from the valleys of the Thames (Henley), Kennet (Thatcham, Theale, Sulhamstead, Burghfield) and Pang (Tidmarsh, Englefield) (all ZZK), and from various upland areas (Boxgrove and Mud House, Tilehurst (ZZK); Waylands Smithy (Reading Mercury); Swyncombe School; Watlington; Burghfield Common;) The dates ranging from September to March indicate much winter activity, and the localities tend to confirm my impressions noted in the last two numbers of this journal. To gravel I must now add chalk; texture rather than pH emerges as a key factor in mole distribution.

Erinaceus europaeus L. Hedgehog. Seventeen records of animals killed on roads on dates ranging from 17.4.72 to 17.9.72 (ZZK and recorder) and a rather unexpected record of one found dead at Stoneham School, Tilehurst, on 26.1.72.
A family of four young, 100 mm (4 inches) long. with eyes open and spines hardened, apparently deserted or bereaved in a Reading garden, 9.8.72 (John Harvey).

Chiroptera.

Pipistrellus pipistrellus (Schreber) Pipistrelle. Two at Riseley Copse, Hants. June 1972. At least four flying up and down a road between Upper Basildon and Aldworth, July 1972. One at Chapel Hill, Tilehurst, 29.8.72. One at Burghfield Gravel Pit, 1.9.72 and eleven there, 19.9.72 (all ZZK).

Plecotus auritus (L.) Long-eared Bat. One in the roof-space of a house at Highmoor Cross was still active on the late date of 26.11.71 (Cdr. A. R. McDougall).

Nyctalus noctula (Schreber) Noctule. A large bat showing flight characteristics of this species seen at heights of 25 to 45 metres (80 - 150 feet) over Sulham Woods in broad daylight, finally making off to the SW, 5.9.72 (ZZK). The colony at Englefield Park is three minutes' flying time away on this course.

Vulpes vulpes (L.) Fox. Six records in the Tilehurst - Sulham area, 7.12.71, 5.3.72, 28.3.72, 8.5.72, 26.5.72, 1.10.72 (the last with injured left hind leg) (ZZK and EMT).
One hunting in the Moor Copse Nature Reserve was seen to catch a small mammal at the edge of the Pang, 29.12.71 (ZZK) (cf. RMC's trapping results here, quoted under Insectivora and Rodentia in this report).
Abundant at Coppid Hall, Binfield Heath, November 1971 (Mrs. Phillimore).
One dead on A4 near Thatcham, 25.10.71; one seen to kill a moorhen at Theale Gravel Pit, 16.1.72; one mobbed by crows and gulls at Manor Farm, 22.1.72 (all ZZK).
One between Gibbet Piece and Cowpond Piece, Wokefield Common, 23.12.71; vixen calling near Rectory Road, Padworth, 25.12.71; two at Padworth, 16.6.72; one there, dead, 26.6.72 (all MJH).
One at Starveall Farm, Aldworth "sending the hares scampering", 10.5.72 (EMT).
One seen crossing the Peppard Road at Chalkhouse Green, 30.8.72.
One in garden at Northcourt Avenue, Reading, 10.4.72 (Miss L. E. Cobb).

Meles meles (L.) Badger. Present at Coppid Hall, Binfield Heath, November 1971 (Mrs. Phillimore).
Several setts in the Tadley area known to Mrs. L. Clarke. One killed by car near Flint House, Goring, 10.12.71. Another, a young female 760 mm (30 inches) long, killed by a car in the same area, north of Battle House about 10.6.72 (B. G. Levy). One dead on road between Pangbourne and Upper Basildon, 2nd week March 1972 (Mrs. J. Topham).
A sett with many holes in Friarhampstead Wood, Woodcote (A. Graham-Kerr) and several setts reported in the Woodcote area.
Two adults at Stonycroft Plantation sett, April 1972 (EMT).
Signs of badgers on Watlington Hill, 26.2.72.
Setts in the Sulham area remained in use during the year despite increasing disturbance at Beal's Plantation, and the sett in Barefoot's Copse was reopened (ZZK).
A sett reported in Bear Wood, and a badger found dead in Bear Wood Road, 6.2.72. (Mrs. Jewell, Wokingham NHS).

Mustela erminea (L.) Stoat. One dead on road at Coppid Hall, 27.11.71.
One seen killing a rabbit on Park Farm,

Mapledurham (EMT).
A fine specimen, very bold, seen by the canal at Thatcham Marsh, 29.3.72; one dead on keeper's gibbet at Furze Ground, Mortimer, 18.7.72 and one seen hunting nearby, 17.8.72 (ZZK).

M. nivalis L. Weasel. One found dead near Swyncombe School, reported 14.12.71.
One found dead at Hartshill, Bucklebury, 11.4.72 (Miss Marshall).
One seen hunting a field mouse at Maidenhatch Farm (EMT).
One on the Fairmile, 29.10.71 (ZZK and P. Gipson).
One in Sulham Wood, 25.7.72; an adult and juvenile crossing the road at Railway Covert, Mortimer, 26.7.72: the juvenile stopped in the middle of the road, whereupon the adult took it by the neck and dragged it to the grass verge.(ZZK).
One dead on Peppard Road, Chalkhouse Green, 4.9.72.

Artiodactyla.

Cervus dama (L.) Fallow Deer. Slots at Nuney Green, 9.5.72.

Capreolus capreolus (L.) Roe Deer. At least three seen by the forester of Englefield estate in Butler's Lands Copse, Mortimer, during the summer of 1972; frayed trees and slots seen July - August (ZZK).
(This species has been recorded in recent years from the Newbury and Crowthorne areas by other Societies.)

Muntiacus reevesi (Ogilby) Muntjac. A fawn found injured on Henley Road, Caversham, by an AA patrolman; reported 15.11.71. (Mrs. Gash).
Present on the Warburg Reserve at Bix; reported 22.3.72 (Mr. Taylor).
Droppings found at King Charles's Head, Goring Heath, during the summer.

Lagomorpha.

Lepus capensis Pallas Hare. One on the floor of Amey's Gravel Pit, Theale, 11.12.71 and again 25.4.72 (ZZK). One must agree with the observers that this area of mudflats, pools and heaps of waste gravel is an unusual habitat.
At least four on the Berkshire Downs near Aldworth, 29.6.72 (ZZK) and others seen there, 10.5.72 (EMT).
Single hares at Marley Tile Pit, 15.1.72; Manor Farm, 4.2.72; and Furze Ground, Mortimer 10.8.72 (all ZZK).
Numerous records from the fields beside the Peppard Road between Sonning Common and Reading from 8.2.72 to 27.6.72, maximum five on 5.4.72, 26.6.72 and 27.6.72, also one 9.10.72.

Oryctolagus cuniculus (L.) Rabbit. Now occurs throughout the area in small numbers wherever suitable conditions

(light, dry soils with banks or patches of dense cover) are found. Locally numerous in heathland localities. Maximum three adults, fifteen juveniles in Bramshill Forest, 31.5.72 (ZZK).

Rodentia.

Sciurus carolinensis Gmel. Grey Squirrel. Status unchanged, abundant wherever there is oak or beech woodland except in very isolated woods, common in suburban areas. Numbers reached plague proportions in Butler's Lands Copse, where an area of beech trees was devastated. The forester destroyed two hundred and sixty squirrels during the year with little effect as numbers were kept up by immigration from surrounding woodlands (ZZK), where presumably the pressure of population was equally intense.

Rattus norvegicus (Berk.) Brown Rat. Eight records from lakes, waterways and Manor Farm, chiefly during the winter months, including a corpse carried by carrion crow; also one at Chapel Hill, Tilehurst, 18.7.72 (all ZZK).
One at dustbins, Reading Town Hall, 21.12.72.
Two dead on Peppard Road, 21.3.72 and 12.9.72.

Rattus rattus L. Black Rat. Present at Marsh Mill, Henley, Dec. 1964 to March 1965 (Mr. New).

Apodemus sylvaticus (L.) Wood Mouse. Common at Moor Copse Nature Reserve; eight taken in forty-eight trap-nights, 18.3.72 and 12-14.4.72 (RMC).

Mus musculus L. House Mouse. One dead Chapel Hill, Tilehurst, 8.4.72 (ZZK).

Micromys minutus (Pallas) Harvest Mouse. A colony has been located in a reed-bed near Moulsford (P. J. Dillon).

Clethrionomys glareolus Schr. Bank Vole. One, rather grey in colour but clearly seen, in Clay Copse, Tilehurst, 19.4.72 (ZZK).
Common at Moor Copse Nature Reserve, where nine were caught in forty-eight trap-nights, 18.3.72 and 12-14.4.72 (RMC).
This is often the dominant mouse species in low-lying marshy woodland. When only a small number of traps is employed, as at Moor Copse, the relative numbers of Bank Vole and Wood Mouse caught may depend on the time of day at which the traps are cleared and reset. If this is done in the morning, the more diurnal voles may occupy traps which are then unavailable to the nocturnal mice, and vice versa.

Arvicola amphibius L. Water Vole. Up to three in the streams at Thatcham Marsh between 25.10.71 and 29.3.72; one on the Sul brook, Pangbourne, 28.10.71 and 29.8.72; one on R. Kennet at Theale gravel pit, 13.11.71, 20.12.71, 19.3.72 and April 1972; one on Foudry Brook, Mortimer, 11.7.72 (all ZZK).

Microtus agrestis (L.) Short-tailed Vole One taken in the Moor Copse Nature Reserve beside a field path, 14.4.72 (RMC).

Contributors: Alwynne Bowyer
R. M. Cross
Malcolm J. Hitchcock
Zbigniew and Zdsislaw Karpowicz
Gillian Neate
Kevin Roff
Mrs. E. M. Trembath
J. F. Wright

Addenda

Sorex minutus L. Pygmy Shrew. Seen on bridge, Thatcham Marsh, 1.1.72 (ZZK).

Neomys fodiens Pennant Water Shrew. Thatcham Marsh 26.10.71, (ZZK).
One caught by cat, Kingwood Common, 15.8.72 (E.J. Stanford).

The Recorder's Report for Botany

1972

by B. M. Newman

Records sent in by the following members are gratefully acknowledged:- Mr. P. Andrews (PA), Dr. H. J. M. Bowen (HJMB); Miss L. E. Cobb (LEC); Mrs. M. Reiss (MR); Dr. J. Toothill (JT); Mrs. E. M. Trembath (EMT); Miss J. M. Watson (JMW).

The nomenclature and order are according to the "Flora of the British Isles" by Clapham, Tutin and Warburg, 2nd edition 1962. An alien taxon is indicated by an asterisk (*). English names in common use have been given where possible and more recently invented names are put in quotation marks.

List of Members' Records

*Selaginella kraussiana (Kunze) A. Br.
By Silwood House and by pond in Japanese Garden, Silwood Park. (HJMB)

Ophioglossum vulgatum L. Adder's Tongue
Bere Court, Pangbourne. Several well grown plants found in long grass by P. Barney. (EMT)

Ranunculus arvensis L. Corn Buttercup 'Corn Crowfoot'
One plant found on disturbed ground, Shinfield Road, opposite Cutbush Lane. (JT)

Papaver argemone L. 'Long Prickly-headed Poppy'
Cornfield near the Fair Mile. (HJMB)

Corydalis claviculata (L.) DC 'White Climbing Fumitory'
Clay Hill, Stanford Dingley. (EMT)

Fumaria micrantha Lag.
Cornfield near the Fair Mile. (HJMB)

Fumaria vaillantii Lois.
Cornfield near the Fair Mile. (HJMB)

Lepidium campestre (L.) R. Br. Pepperwort
Several plants on bank of ditch near High Copse Farm, Shinfield. (JT)

*Cardaria draba (L.) Desv. 'Hoary Cress' 'Hoary Pepperwort'
On disturbed ground at junction of Brooker's Hill with Hollow Lane, Shinfield. (JT)

*Erysimum cheiranthoides L. Treacle Mustard
Cornfield, Pangbourne. (EMT)

Reseda luteola L. Weld, Dyer's Rocket
Several plants on waste ground near school in Shinfield. (PA)

*Cistus laxus Ait.
One bush among native vegetation in Silwood Park. (HJMB)

Cerastium arvense L. 'Field Mouse-ear Chickweed'
Aldworth Downs. (EMT)

Scleranthus annuus L. 'Annual Knawel'
In stubble field by the Fair Mile. (HJMB)

*Montia perfoliata (Willd.) Howell
Appeared 1971 and 1972 in shrubbery near Bacteriology block, N.I.R.D., Shinfield. Origin unknown. (JT)

Geranium pyrenaicum Burm. f. 'Mountain Cranesbill'
Thames tow-path, Basildon. (EMT)

Geranium columbinum L. 'Long-stalked Cranesbill'
Old railway track, Long Lane, Hermitage. (HJMB)

*Oxalis europaea Jord. 'Upright Yellow Sorrel'
In dumped soil, Whiteknights Park. (HJMB)

*Impatiens capensis Meerburgh Orange Balsam, Jewel Weed
Occasional on banks of River Loddon above and below Arborfield Mill. (PA)

*Impatiens glandulifera Royle Himalayan Balsam, Policeman's Helmet
Now rampant along both banks of River Loddon above and below Arborfield Mill. It has spread very rapidly along the river during the last four or five years and plants up to twelve feet tall were found two years ago. (PA).

Ononis repens L. Restharrow
Waste ground near Shinfield school. (JT)

Melilotus altissima Thuill. 'Tall Melilot'
Waste ground at corner of London Road and London Street, Reading. (BMN)

Trifolium medium L. Zig-zag Clover
Railway bank near Winnersh Halt. (HJMB)

Trifolium striatum L. 'Soft Trefoil'
On tipped soil near South Lake, Woodley. (HJMB)

Anthyllis vulneraria L. Kidney-vetch Ladies' Fingers
Disused railway line at Upton. (LEC)

*Robinia pseudoacacia L. False Acacia
Several small trees, roadside, Farley Hill. (PA)

Lathyrus aphaca L. Yellow Vetchling
Dry Sandford Pit near Cothill. (JMW)

Apium inundatum (L) Rchb. f.
Scarce, on muddy peat at South Lake, Woodley. (HJMB)

Sison amomum L. Stone Parsley
In hedgebanks near Donnington Castle. (HJMB)

*Polygonum cuspidatum Sieb. & Zucc. Japanese Knotweed
Several well established clumps on banks of River Loddon at Arborfield Mill. (PA)

*Gaultheria shallon Pursh
Swinley Park, and near Caesar's Camp. E. E. Green. (HJMB)

Calluna vulgaris (L.) Hull Ling, Heather
A few plants in Wilderness, Whiteknights Park. (HJMB)

Primula veris L. X vulgaris Huds. Common Oxlip
One plant at Bere Court, Pangbourne. (EMT)

Blackstonia perfoliata (L.) Huds. Yellow-wort
Disused railway line at Upton. (LEC)

Linaria purpurea (L.) Mill. X repens (L.) Mill.
Railway bank, Hermitage. Miss W. A. Keens. (HJMB)

Linaria repens (L.) Mill. 'Pale Toad-flax'
Disused railway line at Upton. (LEC)

Orobanche elatior Sutton 'Tall Broomrape', Great Broomrape
Very plentiful on verge each side of road leading to Churn, one eighth of a mile from the main road, Blewbury. (MR)

Verbena officinalis L. Vervain
In wood near Pangbourne. (HJMB)

Stachys palustris L. 'Marsh Woundwort'
Childe-Beale Trust, Basildon. A very fine colony. (EMT)

Lamium amplexicaule L. Henbit
Woodhouse Farm, Hailey. (EMT)

Lamium hybridum Vill. 'Cut-leaved Dead-nettle'
Woodhouse Farm, Hailey. (EMT)

Plantago coronopus L. Buck's-horn Plantain
Silwood Park, rare. E. E. Green. (HJMB)

*Campanula persicifolia L.
Railway bank, east of Bracknell. (HJMB)

Legousia hybrida (L.) Delarb. Venus's Looking-glass
Cornfield near Pangbourne, near the Fair Mile. (HJMB)

Bidens tripartita L. 'Tripartite Bur-Marigold'
One plant in ditch on waste ground near Shinfield School. (JT)

Inula conyza DC Ploughman's Spikenard
Disused railway line at Upton. (LEC)

Erigeron acer L. 'Blue Fleabane'
Disused railway line at Upton. (LEC)

Chrysanthemum segetum L. Corn Marigold
Three or four plants on roadside verge, Greensward Lane, Arborfield. (PA)

*Echinops sphaerocephalus L. Globe Thistle
Roadside, Earley. (HJMB)

Onopordum acanthium L. Scotch Thistle, Cotton Thistle
Roadside bank, M4 near Yattendon. (HJMB)

*Cicerbita macrophylla (Willd.) Wallr. Sow Thistle
Very profuse before 30-mile-limit sign on Wantage Road entrance to Streatley. (MR)

*Hieracium aurantiacum L.
Rough field, Emery Acres, Upper Basildon. (EMT)

*Elodea canadensis Michx. Canadian Pondweed
Quantities in flower in newly made ponds at Childe-Beale Trust, Basildon. (EMT)

Ruscus aculeatus L. Butcher's Broom
Wood near Pangbourne. (HJMB)

Epipactis leptochila (Godf.) Godf. 'Narrow-lipped Helleborine'
Several plants flowering in beech wood, Westfield, Lower Basildon. (EMT)

Ophrys apifera Huds. Bee Orchid
Several plants on grass slopes east of Hardwick Estate. Nine plants with flowers lacking in red pigment on chalk grass slopes above Hartslock Woods. (EMT)

Dactylorchis fuchsii (Druce) Vermeul. Common Spotted Orchid
Two plants near Whiteknights Lake, Earley. (HJMB)

Anacamptis pyramidalis (L.) Rich. 'Pyramidal Orchid'
On verge in Wantage Road, Streatley, by "High View" entrance. (MR)
Field, west of Stonycroft Plantation, Whitchurch. Sixty eight plants were counted in about 40 m^2, where only five or six plants had been seen for the past seven years. (EMT)
Widespread on rough chalk grassland west of Path Hill. (EMT)

Carex pseudocyperus L. 'Cyperus Sedge'
Swinley Park. E. E. Green. (HJMB)
South bank of River Loddon, between A327 and Arborfield Hall Farm. (JT)

Carex vesicaria L. 'Bladder Sedge'
Swinley Park. E. E. Green. (HJMB)

Carex hirta L. Hammer Sedge
North bank of River Loddon between A327 and Arborfield Hall Farm. (JT)

Carex otrubae Podp. 'False Fox-sedge'
Ditch, Church Lane, Three Mile Cross, and north bank of River Loddon between A327 and Arborfield Hall Farm. (JT)

Carex divulsa Stokes 'Grey Sedge'
Bank, Hollow Lane, Shinfield. (JT)

Carex spicata Huds. 'Spiked Sedge'
Beside footpath near boiler house, N.I.R.D., Shinfield, and foot-bridge near Parmot Farm, Shinfield. (JT)

Carex remota L. 'Remote Sedge'
Ditch, Church Lane, Three Mile Cross, and north bank of River Loddon between A327 and Arborfield Hall Farm. (JT)

*Lolium temulentum L. Darnel
Small Mead Tip. (HJMB)

*Briza maxima L.
Near metoerological station in Silwood Park. (HJMB)

*Ceratochloa carinata (Hook. & Arn.) Tutin
Small Mead Tip. (HJMB)

Nardus stricta L. Mat-grass
Locally abundant at Bulmershe. (HJMB)

WEATHER RECORDS IN 1972

by A. E. Moon

The data refer to Reading University Meteorological Station. Since this is a new te, as mentioned in the summary for 1971, the averages for the old London Road site e no longer applicable and are omitted from this summary. As from 1st January, 1972 l temperature records were made in Celsius degrees, new thermometers being supplied by e Meteorological Office graduated in this scale. This is now standard practice. A nversion table is included for convenience of those who would like to convert to hrenheit degrees. A "rain day" is a day on which rainfall equals or exceeds 0.2 mm. more. For the designation of frost and ground frost days see Weather Records in 1961.

TION - READING UNIVERSITY. HEIGHT ABOVE MEAN SEA LEVEL - 215 ft.

		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	YEAR
MEAN DAILY EMPERATURES °F	MAX.	6.4	7.4	12.1	12.0	14.8	15.9	21.0	20.4	16.5	14.9	9.5	8.5	13.3
	MIN.	1.5	2.2	2.6	5.2	6.8	8.1	11.8	11.1	7.8	7.4	3.1	3.2	5.9
	MEAN	3.9	4.8	7.3	8.6	10.8	12.0	16.4	15.7	12.1	11.1	6.3	5.9	9.6
	RANGE	4.9	5.2	9.5	6.8	8.0	7.8	9.2	9.3	8.7	7.5	6.4	5.3	7.4
	GRASS MIN.	-1.2	-0.9	-1.6	1.6	2.4	4.5	8.4	6.5	2.7	2.7	-0.6	-1.1	2.0
EXTREME EMPERATURES °F	E. MAX.	10.7	11.3	19.4	15.3	19.2	18.0	26.3	23.9	22.3	22.0	15.4	13.6	26.3
	DATE	23	25	17	1	2	16,17	17	14	1	7	6	13	July 17
	E. MIN.	-10.3	-6.6	-1.9	0.6	2.3	4.2	7.1	6.5	2.4	1.0	-2.0	-4.0	-10.3
	DATE	31	1	2	9	17	2	12	11,19	27	21	18,25	31	Jan. 31
	E. GRASS MIN.	-16.1	-8.5	-7.0	-5.8	-4.6	-1.8	-0.2	-0.9	-4.2	-5.5	-8.6	-7.5	-16.1
	DATE	31	10	6	28	17	30	12	11	26	4	18	31	Jan. 31
DAYS WITH FROST		7	3	6	0	0	0	0	0	0	0	7	3	26
" "	GROUND FROST	16	18	23	11	8	8	1	3	10	14	20	21	153
UNSHINE HOURS	SUM.	42.1	35.0	159.2	144.3	169.5	180.7	174.5	198.9	140.1	115.3	80.6	51.4	1491.6
	% POSS.	16	12	43	35	35	37	35	44	37	35	30	21	33
	DAILY MEAN.	1.36	1.21	5.13	4.81	5.47	6.02	5.63	6.42	4.67	3.72	2.69	1.66	4.07
RECIPITATION m.m.	AMOUNT	57.4	61.1	61.6	43.7	53.3	32.8	25.7	35.0	23.0	28.4	60.7	75.6	558.3
	RAIN DAYS	23	20	16	17	26	17	8	7	6	6	13	18	177
	MAX. RAIN IN 1 DAY	9.1	11.5	17.3	7.2	9.8	8.9	8.0	19.1	13.9	12.2	14.4	16.9	19.1
	DATE	10	3	4	13	1	9	31	6	8	10	12	5	Aug. 6
LONGEST RUN OF CONSECUTIVE RAIN DAYS		8	6	11	12	10	7	2	4	3	2	3	9	-
LONGEST RUN OF CONSECUTIVE DRY DAYS		3	3	13	9	0	5	11	18	12	15	4	7	-
SNOW OR SLEET DAYS		5	1	2	0	0	0	0	0	0	0	1	0	9
DAYS SNOW LYING		0	0	0	0	0	0	0	0	0	0	0	0	0
ISIBILITY	FOG AT 0900 G.M.T.	3	5	3	0	0	0	0	0	1	0	2	7	21
HUNDERSTORM CTIVITY	DAYS OF THUNDER	0	1	1	1	6	1	1	2	1	0	0	1	15
	DAYS OF HAIL	0	0	0	1	1	0	0	0	0	0	0	0	2

CONVERSION OF DEGREES CELSIUS TO FAHRENHEIT

40°C to -20°C

°C	.0	.2	.5	.8	°C	.0	.2	.5	.8
40	104	104	105	105	9	48	49	49	50
39	102	103	103	104	8	46	47	47	48
38	100	101	101	102	7	45	45	45	46
37	99	99	99	100	6	43	43	44	44
36	97	97	98	98	5	41	41	42	42
35	95	95	96	96	4	39	40	40	41
34	93	94	94	95	3	37	38	38	39
33	91	92	92	93	2	36	36	37	37
32	90	90	91	91	1	34	34	35	35
31	88	88	89	89	0	32	32	33	33
30	86	86	87	87	-0	32	32	31	31
29	84	85	85	86	-1	30	30	29	29
28	82	83	83	84	-2	28	28	27	27
27	81	81	81	82	-3	27	26	26	25
26	79	79	80	80	-4	25	24	24	23
25	77	77	78	78	-5	23	23	22	22
24	75	75	76	77	-6	21	21	20	20
23	73	74	74	75	-7	19	19	19	18
22	72	72	73	73	-8	18	17	17	16
21	70	70	71	71	-9	16	15	15	14
20	68	68	69	69	-10	14	14	13	13
19	66	67	67	68	-11	12	12	11	11
18	64	65	65	66	-12	10	10	9	9
17	63	63	63	64	-13	9	8	8	7
16	61	61	62	62	-14	7	6	6	5
15	59	59	60	60	-15	5	5	4	4
14	57	58	58	59	-16	3	3	2	2
13	55	56	56	57	-17	1	1	1	0
12	54	54	55	55	-18	0	-1	-1	-2
11	52	52	53	53	-19	-2	-3	-3	-4
10	50	50	51	51	-20	-4	-4	-5	-5

MONTHLY WEATHER NOTES, 1972

January — A rather dull month but mainly mild except during the last few days. The air minimum on 31st was the lowest recorded in any month since January 1963.

February — This was the warmest February since 1967 but it was also the wettest and dullest since 1966.

March — The sunniest and warmest March since 1967 and wettest since 1964. Day temperature reached 15.56°C (60.0°F) for the first time this year on 15th (17.9°C).

April — This was the warmest April since 1967, largely due to the warmer than average night temperatures.

May — The coldest May since 1968 and dullest since 1969. There were only five days scattered throughout the month on which less than 0.2 mm. of rain fell and only one of these was completely rainless (the 19th). The number of rain days was the largest for any May in the University records immediately available going back to 1918.

June — This was the coldest June since relaible records started at the University in 1921 and the first time in that period that a day maximum temperature of 21.1°C (70.0°F) has not been reached. It is also remarkable that the highest temperature reached this year (to 30th June) was 19.4°C (66.9°F) on 17th March. The number of ground frosts was the highest in June, the previous highest being six in 1956.

July — This was the dullest July since 1968, and the maximum temperature of 26.3°C on 17th was the lowest in July since 1966.

August — The coldest August since 1968 and the driest and sunniest since 1964. A drought period existed by the 28th. The number of ground frosts was highest in any August since 1921, when there were four.

September — The coldest September since 1952. A drought period of twenty-five days ended on 8th.

October — A drought period of twenty days ended on 9th and also a period of fifteen days on 27th.

November — The first air frost of thr winter occurred on 9th and the first ice was noted on pools on 14th. The first sleet of the winter occurred on 23rd.

December — This was the sunniest December since 1967 but the wettest since 1968; it was also the wettest month since June 1971.

Temperature failed to reach 26.67°C (80.0°F) this year, the first time since 1962.

ATMOSPHERIC POLLUTION

1972

Measurements of smoke concentration and sulphur dioxide (SO_2) are summarised in the following table. They constitute the results of daily measurements of smoke and SO_2 pollution by air filter and volumetric method respectively from apparatus installed in the Geography Department, Reading University, at Whiteknights.

	Smoke Concentration Micrograms per cu. m.			Sulphur Dioxide (SO_2) Concentration Micrograms per cu. m.		
Month	Mean	Highest	Lowest	Mean	Highest	Lowest
January	38	105 6th	2 12th	103	274 6th	39 12th, 26th
February*	36	118 25th	3 2nd,15th	94	308 25th	45 19th
March	38	129 17th	0 4th	118	369 17th	25 31st
April	11	47 12th	1 2nd,30th	55	97 16th 17th	26 22nd
May	7	29 2nd	1 23rd,25th 26th,28th 29th,30th	59	129 2nd	38 23rd, 27th, 28-9th
June	5	12 13th	2 2-8th,17th 20th,24th, 25th,30th	34	51 1st 27th, 28-9th	13 20th
July⌀	7	17 13th, 28th	0 1st	45	65 11th, 13th, 29th	25 20th
August	13	39 22nd	0 5th	47	105 23rd	17 9th
September	28	73 22nd	4 10th	56	123 28th	25 3rd
October	25	95 31st	2 29th	75	219 6th	25 18th, 22nd
November	23	74 24th	3 12th,19th, 20th	69	174 24th	25 29th
December	37	156 18th	1 1st,5th	88	382 18th	19 1st
Year	22	156 18th Dec.	0 4th March 1st July 5th Aug.	70	382 18th Dec.	13 20th June

* Elecrticity cuts due to miners' strike
⌀ Electricity cut

Membership List

Honorary Members

Chandy, Mrs. A., Clarence Lodge, 93 London Road, Reading RG1 5BY
Hora, Dr. F. B., Dept. Botany, The University, Reading
Sandels, Mrs. H., Stonecroft, 33 Walterbush Road, Chipping Norton OX7 5DP
Vear, T., 134 Shinfield Road, Reading
Watson, E. V., B.Sc., Ph.D., F.L.S., Littlecourt, Cleeve, Goring-on-Thames, Oxon.
Watson, Miss J. M., 30 Westwood Road, Tilehurst, Reading

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Annereau, Mrs., " " " " "
Ashwell, Mrs. K. M., 7 Woodland Drive, Tilehurst, Reading
Baker, B. R., B.Sc., F.M.A., F.R.E.S., 5 Dovedale Close, The Mount, Caversham, Reading
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Baker, Miss Ann, " " " "
Bateman, Miss J. C., 2 Tilehurst Road, Reading
Beesley, A., 27 Western Elms Avenue, Reading
Benda, P., 3 Tupsley Road, Coley Park, Reading
Benda, Mrs., " " " " "
Bentall, Miss E. M., Crooksbury, 144 Upper Woodcote Road, Caversham, Reading
Bernard, Miss B., 10 Deepdene Close, Reading
Blackwell, Mrs. E. R., 81 Wilderness Road, Reading
Bowen, H. J. M., M.A., D.Phil., 20 Winchester Road, Oxford OX2 6NA
Bristow, B., 34 Longmoor Lane, Mortimer Common, Reading
Bristow, Mrs., " " " " "
Bull, G. A., 12 Warwick Road, Reading
Bull, Mrs., " " " "
Bunting, Prof. A. H., M.Sc., Dept. Agric. Botany, The University, Reading
Butler, Miss K. I., 54 Alexandra Road, Reading
Carter, H. H., M.A., B.Sc., A.M.A., 82 Kennylands Road, Sonning Common, Reading RG4 9JT
Chavasse, Rev. S. E., 18 College Road, Reading
Cheke, Miss V. E., 50 Petworth Court, Bath Road, Reading RG1 6PH
Clements, Miss M. J. W., 108 Kenilworth Avenue, Reading
Cobb, Miss L. E., B.A., 55 Northcourt Avenue, Reading RG2 7HE
Cole, J. A., M.Sc., 30 Nicholas Road, Henley-on-Thames, Oxon.
Cole, Mrs., B.A., " " " " " " "
Corrall, L. N., 8 Greenleas Avenue, Emmer Green, Reading RG4 8TA
Corrall, Mrs., " " " " " " " "
Croghan, Mrs. M. A., 5 Woden House, Goring, Reading
Davey, Miss T., B.Sc., M.A., M.I.Biol., 4 Bull Meadow, Streatley, Berks.
Davies, J. R., M.P.S., F.B.O.A., 50 Elmstone Drive, Tilehurst, Reading
Dicker, Miss M. J., 23/193 Wensley Road, Reading RG1 6EA
Diserens, J. N., 14 Avalon Road, Earley, Reading
Diserens, Mrs., " " " " "
Dowman, Miss I., 52 Vine Crescent, Burghfield Road, Reading

Dyczek, Christopher, 47 Argyle Street, Reading
Eagar, S., 76 Redhatch Drive, Earley, Reading
Erith, Miss A. G., B.Sc., Ph.D., 70 Highmoor Road, Caversham, Reading RG4 7BG
Finn, Miss Abigail M., 130 Tilehurst Road, Reading
Fletcher, M. V., B.A., 70 South Street, Reading RG1 4RA
Fletcher, Mrs. I., " " " " " "
Fletcher Colin, " " " " " "
Fletcher, Katherine, " " " " " "
Flower, Mrs. C. D. R., S.R.N., F.Z.S., 77 Whiteknights Road, Reading RG6 2BB
Foat, N. J. W., Flat 2, 40 Redlands Road, Reading
Foley-Fisher, Dr. J. A., 18 Betchworth Avenue, Earley, Reading
Foley-Fisher, Mrs., " " " " "
Foley-Fisher, David, " " " " "
Frank, Mrs. C. M., Netherleigh, Riverview Road, Pangbourne, Berks.
Gambles, R. M., West Warren, Warren Road, Woodley, Reading
Gambles, Mrs., " " " " " "
Goold, Mrs. E. M., 15 St. Bartholomew's Road, Reading
Gwatkin, T. L., M.A., 14 Courtenay Drive, Emmer Green, Reading
Hall, Mrs. M. E., B.Sc., Garth House, St. John's Road, Mortimer, Reading
Harding, Bellapais, 31 Folder's Lane, Bracknell, Berks.
Harding, Mrs. J. C., Ph.D., " " " "
Hardy, M. G., M.A., Dept. Zoology, Thr University, London Road, Reading
Harper, R. E., 6 Fernbrook Road, Caversham, Reading
Harrigan, Dr. W., 68 Winton Road, Reading
Harrigan, Mrs., " " " "
Harris, Prof. T. M., M.A., F.R.S., F.L.S., Dept. of Geology, The University, Reading
Harrison, M. B., Oak Drive, Woodley, Berks.
Harrison, Mrs., " " " "
Hartwell, V., 37 Byron Road, Earley, Reading RG4 1EP
Hartwell, Mrs., " " " " " "
Hawkins, Mrs. S., 63 Tilehurst Road, Reading
Heather, F. L., 6 Pembroke Place, Caversham, Reading RG4 OHU
Heather, Mrs., " " " " " " "
Hemken, E., Audley House, Station Road, Earley, Berks.
Hibbert, Miss C., B.A., 21 Caroline Court, Bath Road, Reading
Highwood, Miss S., 6 Southern Hill, Redlands Road, Reading
Homer, T. J. G., M.A., St. Timothee, Pinkneys Green, Oxon.
Housden, Mrs. H. V., 9 Knowle Close, Upper Woodcote Road, Caversham, Reading RG4 7LH
Housden, Miss J. M. V., B.Sc., " " " " "
Ingram, Miss G. M., 14 Haddon Drive, Woodley, nr. Reading RG5 4LU
Irving, E. D., B.Sc., 28 Grosvenor Road, Caversham, Reading
Irving, Mrs., " " " " "
Johnson, T., 54 Albert Road, Caversham, Reading
Jones, Stephen, 162 Kentwood Hill, Reading
Jones, W., B.Sc., 9 Micklands Road, Caversham, Reading
Jones, Ian, " " " " "
Kay, Mrs. B., M.Sc., 39 St. Peter's Avenue, Caversham, Reading
Kemp, B. R., B.A., Ph.D., St. Patrick's Hall, Northcourt Avenue, Reading
Knowles, John, 17 Broomfield Road, Tilehurst, Reading
Knowles, Stephen, " " " "
Lambden, Mrs. H. D., B.Sc., 74 Beech Lane, Earley, Reading
Lappin, G., 45 Gloucester Road, Reading

Lawton, F., 20 Fawcett Crescent, Woodley, Reading
Lawton, David, " " " "
Leatherdale, D., F.L.S., F.R.E.S., 7 Kinecroft, Wallingford, Berks. Tel. Crowmarsh 4665
Leeke, C. J., B.Sc., A.M.I.Biol., 1 Heathway, Chapel Hill, Tilehurst Reading
Leeke, Mrs., " " " " " "
Leeke, Roger G., 7 Heathway, Chapel Hill, Reading
Levy, B. G., B.A., Ph.D., Tinepits Cottage, Whitchurch Hill, Reading
Lewis, B. E. C., 13 Buxton Avenue, Caversham, Reading
Lewis, Mrs., " " " " "
Lewis, Miss P. [illegible]., 39 Salcombe Drive, Earley, Reading
Lush, Miss G. M., 32 Matthews Green Road, Wokingham, Berks.
Lush, R., " " " " " "
Lynton, Miss Lynda, 6 Briar Close, Caversham, Reading
McKenzie, Mrs. I. J., B.Sc., Penard, 96 Elvendon Road, Goring-on-Thames, Reading RG8 ODR
Mannes-Abbott, Mrs. S., Sorrel, Castle End Lane, Ruscombe, Twyford, Berks.
Mason, Miss D., B.A., 4 Selva Court, Kendrick Road, Reading RG1 5DT
Mayes, Miss A. E., B.Pharm., M.P.S., 5A The Precinct, Milestone Way, Emmer Green, Reading
Meek, Mrs. P.A., 42 Alexandra Road, Reading
Meek, Miss C., " " " "
Moon, A. E., F.R.Met.S., Flat 22, Leighton Court, Pepper Lane, Earley, Reading RG6 2SG
Needs, Miss B., 6 Prospect Street, Reading
Nelmes, Miss E. M., M.A., Dormers, 194 Cainscross Road, Stroud, Glos. Tel. Stroud 2666
Newman, J. F., B.Sc., F.R.E.S., Earley Cottage, 25 Beech Lane, Earley, Reading RG6 2PT
Newman, Mrs. B. M., B.Sc., " " " " "
Newman, John, " " " " "
Olver, Miss C., 5 Flaxman Close, Earley, Reading
Owen, Dr. H., Dept. Agric. Botany, The University, Reading
Padley, F. C., 2 Eldon Place, Reading
Parkinson, Miss I. N., B.A., 10 Fern Close, Goring-on-Thames, Reading RG8 OAR
Paterson, Mrs. K., 53 Alexandra Road, Reading
Paul, Mrs. V. N., B.Sc., Overdale, Peppard Common, Oxon.
Pearce, E., 9 Amity Road, Reading
Pearce, Mrs., " " "
Phillips, Mrs. V. A., 3 Longleaze, Wootton Bassett, Wilts.
Pointon, E. F., 29 Lockstile Way, Goring-on-Thames, Oxon.
Pointon, Mrs., " " " " " " "
Potts, T. A., Rockhampton Manor, Lambourne, Berks.
Pretlove, Dr. A., 11 Kenilworth Avenue, Reading
Pretlove, Mrs., " " " "
Price, A., 6 Mansfield Road, Reading
Reiss, Mrs. M. C., Ridgeways, Wantage Road, Streatley, Reading RG8 9LA
Rhodes, Mrs. K. F., B.Sc., 65 Tilehurst Road, Reading RG3 2JC
Robertson, Miss I. S., 81 Westwood Green, Cookham, Berks.
Rose, G. N., 27 Coley Hill, Reading RG1 6AE
Rose, Mrs., " " " " " "
Rose, Miss Jenny, " " " " "
Sandford, J. E., 29 Elvaston Way, Tilehurst, Reading RG3 4LX
Sandford, Mrs., " " " " " " "

Sell, M. R. W., B.A., 72 Westwood Glen, Tilehurst, Reading
Sell, Mrs. J. R., " " " " "
Sheringham, J. G. T., 14 Shooters Hill, Pangbourne, Berks.
Smith, R. H., B.A., M.Sc., Wantage Hall, Upper Redlands Road, Reading RG1 5JG
Street, Mrs. H. A., Vienna, New Road, Holyport, Maidenhead, Berks.
Surplice, Kenneth, 3 Savernake Close, Tilehurst, Reading
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Taylor, Mrs. W. A. Norman, 143 London Road, Reading
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Toothill, Dr. Joyce, 15 Birdhill Avenue, Reading RG2 7JT
Towers, Mark S., 24 De Beauvoir Road, Reading
Townend, Miss S. Y., B.Sc., 6/74 Wensley Road, Reading RG1 6DN
Trembath, Mrs., 5 Thames Avenue, Pangbourne, Berks.
Trickett, Miss S., 44 Inglewood Court, Liebenrood Road, Reading
Vincent, S. A., Woodlands, 46 Cockney Hill, Reading
Vincent, Mrs., " " " " "
Vincent, W. R., Cray Cottage, Harpsden Woods, Henley-on-Thames, Oxon.
Vincent, Mrs. V., " " " " " " " "
Vincent, Clare, " " " " " " " "
Waight, Miss F. M. O., F.L.S., 139 St. Peter's Road, Earley, Reading
Walker, Miss Rosemary, B.Sc., Oakways, Russell Road, Tokers Green, Reading
Ward, D. J., 31 Elsley Road, Tilehurst, Reading
Ward, Mrs. K., " " " "
Ward, Penelope, " " " "
Ward, Richard, " " " "
Ward, J. L., 10 Uffington Close, Tilehurst, Reading
Ward, Mrs., " " " " "
Ward, John, " " " " "
Ward, Sandra, " " " " "
Watsor, C. F. C., Foxhill Farm, Playhatch, Sonning, Berks.
Watson, Mrs., " " " " "
White, Mrs. D., 66 Berkeley Avenue, Reading
Whiteway, Miss Jennie, B.Sc., 16 Swanston Field, Whitchurch, Reading RG8 7HP
Whitfield, Mrs. S. J., Ashdown, Basingstoke Road, Spencers Wood, Reading RG7 1PH
Whittaker, Mrs. P. M., 67 Inglewood Court, Liebenrood Road, Reading
Wilcock, Mrs. M., 24 Coley Avenue, Reading RG1 6IQ
Wilkinson, W., 6 Cedar Close, Wokingham, Berks. RG11 1EA

Schools

Abbey School, Kendrick Road, Reading
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